ABET
Self-Study Report
for the
Bachelor of Information Technology
and Management
at
Illinois Institute of Technology
Chicago and Wheaton, Illinois

June 30, 2015

CONFIDENTIAL

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Program Self-Study Report
for CAC of ABET Accreditation

BACKGROUND INFORMATION

A. Contact Information
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B. Program History
The Bachelor of Information Technology and Management was established as an undergraduate transfer program in fall of 2002. The first freshmen (four-year) students entered the program in fall of 2009. The program has never had an ABET review, although other computing and engineering curricula at the university are ABET accredited. One hundred and thirteen students have graduated from the program, and one hundred and thirty-eight students are currently enrolled.

C. Options
The Bachelor of Information Technology and Management offers seven optional specializations, plus the option to simultaneously complete a graduate degree in either of two formal co-terminal degree programs. Students are not required to complete a specialization. As these specializations are entirely optional they are not considered to be separate academic tracks. The seven specializations include:

Data Management
Focuses on the design, development and administration of traditional and Internet-based data management.
ITMD 422 Advanced Database Management
ITMS 428 Database Security
AND select two courses from the following:
ITMO 444 Cloud Computing Technologies
OR any ITMD elective(s)

Networking and Communications
Focuses on network applications and management.
ITMD 441 Network Applications and Operations
AND select one course from the following:
ITMO 433 Enterprise Server Administration
ITMO 453 Open Source Server Administration
AND select any two courses from ITMO, ITMT, or the following:
ITMD 465 Rich Internet Applications
ITMS 443 Vulnerability Analysis and Control
ITMS 478 Cyber Security Management

IT Entrepreneurship and Management
Focuses on managerial and entrepreneurial skills needed to launch a new enterprise.
ITMM 470 Fundamentals of Management for Technical Professionals
ITMM 481 IT Entrepreneurship
AND select any two courses from ITMM or the following:
BUS 100 Introduction to Business
ECON 151 Making Strategic Decisions in the Marketplace
OR any BUS electives at the 200-level or above
OR any INTM electives selected with adviser’s approval.

Software Development
Focuses on programming and the development of sophisticated applications.
ITMD 415 Advanced Software Development
ITMD 462 Web Site Application Development
AND select one course from the following:
ITMD 412 Advanced Structured & Systems Programming
ITMD 413 Open Source Programming
ITMD 419 Topics in Software Development
ITMD 455 Intelligent Device Applications
AND any ITMD elective.
System Administration
Focuses on the administration and management of servers.
ITMO 441 Network Applications and Operations
AND select two courses from the following:
ITMO 433 Enterprise Server Administration
ITMO 450 Enterprise End-User System Administration
ITMO 453 Open Source Server Administration
AND select two courses from the following:
ITMO 417 Shell Scripting for System Administrators
ITMO 444 Cloud Computing Technologies
ITMO 454 Operating System Virtualization
ITMS 458 Operating System Security

Systems Security
Focuses on application, data, and network security and the management of information technology security.
ITMS 478 Cyber Security Management
AND select one course from the following:
ITMO 433 Enterprise Server Administration
ITMO 441 Network Applications and Operations
ITMO 450 Enterprise End-User System Administration
ITMO 453 Open Source Server Administration
AND any two ITMS electives.

Web Design and Application Development
Focuses on the design and development of fully-interactive Web sites and applications for Internet deployment.
ITMO 441 Network Applications and Operations
ITMD 462 Web Application Development
AND select two courses from the following:
ITMO 444 Cloud Computing Technologies
ITMD 455 Intelligent Device Applications
ITMD 463 Intermediate Web Site Application Development
ITMD 464 Advanced Web Site Application Development
ITMD 465 Rich Internet Applications
ITMD 466 Service Oriented Architecture
ITMD 467 Web Systems Integration
ITMD 469 Topics in Application Development

Students are required to complete a minor, although this requirement is waived for students transferring or changing majors into the program who have completed more than thirty semester hours of courses. The most common minor pursued by students in this degree is Psychology.

Students who meet the admission criteria have the opportunity to enroll as a co-terminal degree student. This allows them to complete either the Master of Information Technology and Management or the Master of Cyber Forensics and Security at the same time they are completing their undergraduate degree. Three graduate courses double-count as undergraduate major electives, and both degrees are conferred and awarded on the same date. Students enrolled in this program must maintain a 3.0/4.0 grade point average.

D. Program Delivery Modes
The Bachelor of Information Technology and Management is a full-time or part-time, on-campus, lecture/laboratory program. Over half of our courses are available in the evening, and many courses are also offered at our suburban campus in Wheaton, Illinois. Most of the 4xx level classes are also available via asynchronous delivery over the Internet to support traditional undergraduate students, part-time students, and transfer students who work full- or part-time. The program is not advertised as a remote or online degree and may not be completed as such.

E. Program Locations
All courses in the program are offered at the IIT Main Campus in Chicago, Illinois, or at the Daniel F. and Ada L. Rice Campus in Wheaton, Illinois, or online. There are occasionally courses which are offered exclusively online with both real-time and asynchronous sections. While many courses are offered at both campuses, some courses are only offered at the Rice Campus due to specialized laboratory facilities at that location. Free bus transportation is provided for Main Campus students to attend these courses at the Rice Campus.
F. Public Disclosure

Program Education Objectives (PEOs) and Student Outcomes (SOs) are available at http://appliedtech.iit.edu/information-technology-and-management/programs/undergraduate; annual student enrollment and graduation data is posted at http://appliedtech.iit.edu/information-technology-and-management/about/mission/enrollment-graduation.

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

This is an initial accreditation.
GENERAL CRITERIA

CRITERION 1. STUDENTS

For the sections below, attach any written policies that apply. The sections of the current university Undergraduate Bulletin covering Undergraduate Admission and Academic Policies and Procedures are attached as Appendix G.

A. Student Admissions

Admission decisions are based on academic performance, standardized test scores, teacher/counselor recommendations and evidence of promise to succeed, which includes co-curricular activities, interests and hobbies, and personal maturity.

Students who have attended an accredited high school (although we do accept home schooled students) and engaged in a college preparatory or general education curriculum generally make good candidates for IIT. Specifically, we recommend the following high school courses be completed:

- 4 years of English
- 4 years of Mathematics
- 3 years of Science

It is expected that students select a rigorous high school program that includes AP, IB or honors courses when they are available at the student's school. Students are encouraged to take college courses to supplement their education while they are enrolled in high school.

Students are required to submit official high school transcripts and ACT or SAT scores along with recommendations for evaluation for admission. In general applicants with an unweighted grade point average greater or equal to 3.0 (4 point scale) and ACT scores greater or equal to 24 math and 24 composite or SAT scores greater or equal to 1150 are considered for review for admission. Students considering engineering should have higher grades in math along with higher math scores on the ACT or SAT tests. All applicants are reviewed and if necessary marginal cases will be submitted for review by an admission committee.

B. Evaluating Student Performance

Each student’s progress is monitored at mid semester (1st and 2nd year courses) by the departmental advisor and the Director of Undergraduate Advising and at the end of each semester by the associate chair of the department and the Vice Provost’s office. Degree Works, the online degree audit system, is used to facilitate this process. Students whose progress is unsatisfactory due to low grades are placed on academic probation and notified by email and letter. Students whose progress is unsatisfactory because they have failed to make adequate academic progress—completion of 12 credit hours/semester hours for full-time students or 6 credit hours/semester hours for part time students—towards their degree are placed on academic probation based on the recommendation from the student’s Academic Unit (AU) and notified by email and letter. This information is also recorded in the Banner Student Information System and Degree Works. Students on probation are limited to 15 credit hours/semester hours of coursework, and may not hold office in any student organization. Academic probation may affect a student’s eligibility to participate in varsity athletic sports. IIT is classified as having “selective” admissions, and student academic problems are not usually associated with
insufficient ability or preparation, but more commonly with difficulty adjusting to college, inappropriate choice of major, or financial/emotional stress, and the Student Counseling Center is equipped to help is such cases. If a student stays on academic probation for two (or more) consecutive semesters, the student may be dismissed.

Students are evaluated using a traditional 4-point grading scale, with grades being assigned by the course instructor. All courses have stated learning objectives and instructors are expected to test achievement of those objectives and assign grades based on achievement of those objectives. Specific protocols have been developed for evaluating written and oral communication skills, and the several teamwork and ethics objectives of the IPRO program (see Appendix D). Thus a passing grade in a course implies achievement of the learning objectives at a minimum acceptable level.

The student registration system, Banner, maintains and enforces course prerequisite controls. If a student is currently taking a class that is prerequisite for a course in the following semester, Banner does allow the student to add the class on the following term even though the prerequisite has not yet been satisfied. However the Registrar and Director of Academic Advising review any students who ultimately fail courses that are a prerequisite for a course they registered for, and we have them removed from the course. Instructors for a course, in consultation with a student’s faculty advisor, are allowed to waive a prerequisite for a course for a student by setting a permit in Banner. Prerequisites may also be waived at the departmental level by the Associate Chair.

C. Transfer Students and Transfer Courses

Transfer applicants must be in good academic standing at their previous colleges to be considered for admission to IIT. Applicants with less than 30 hours of transferable college course work must submit high school transcripts and SAT or ACT scores as part of their application. Admission is based upon a cumulative GPA and individual grades in all classes that apply to the selected major. A minimum cumulative GPA of 3.0 is expected for transfer consideration. However, a transfer applicant who has special circumstances will be reviewed by a faculty committee.

The Office of Undergraduate Academic Affairs is responsible for verifying all courses transferred from other colleges. Transfer credit is granted only for courses completed at accredited colleges and universities.

Official credit evaluations are completed only after a student is admitted to IIT. Transfer credit is granted on a course equivalency basis, i.e., the nature, content, level and prerequisites of the course must be comparable to those offered at IIT. Students may transfer a maximum of 68 applicable credits from a 2-year college. Transfer students must complete their last 45 credits at IIT with at least 50% of the course work at the 300- and 400-level in their major discipline. Transfer credit will be accepted for courses completed with the equivalent of a grade of “C” or better. A grade of “C-“ is not acceptable for transfer credit.

Dual admission programs specific to the Bachelor of Information Technology and Management degree have been established with College of DuPage (COD) in Glen Ellyn, Illinois, and Joliet Junior College (JJC) in Joliet, Illinois. Students who meet the requirements of the Dual Admissions Program (DAP) may enroll simultaneously at these schools and at IIT. Applicants must complete a Statement of Intent Form, which permits the exchange of academic admission and advising information between IIT and COD or JJC. Applicants must also complete the application process at both COD or JJC and IIT in order to be admitted to both institutions. The
IIT application may be submitted only for a Bachelor’s program in Information Technology and Management. Admission to other IIT programs may have additional requirements that are outside the scope of the program. Students accepted into the DAP will have access to advising and other services from both institutions. Students enrolled in the DAP must have and maintain a GPA of 3.0 at COD or JCC to remain eligible for admission to IIT. Students must make satisfactory academic progress at COD, as defined by COD, or at JJC, as defined by JJC. Students who successfully complete the institutional course requirements of both institutions under the DAP will be awarded an Associate’s degree from COD or JJC and a Bachelor of Information Technology and Management from IIT.

D. Advising and Career Guidance

Newly admitted first-year ITM undergraduate students are advised by the ITM Director of Undergraduate Advising, Professor Ray Trygstad, while newly admitted transfer students to the degree are generally advised by Professor Jeremy Hajek. New student advising runs from April through August for Fall new admits, and November through January for Spring new admits. There is a campus-wide, new student advising application for advisors and new students to make this process easier. All new students are advised at one of the summer or winter orientation sessions, or via email/phone for out of state students before they arrive on campus. Usually 15-30 minutes is spent on each incoming student plus numerous e-mails. After this advising session the new student registers online and courses are reviewed by their advisor.

Advising of Continuing Students

Continuing students are normally advised by their originally assigned advisor through graduation. Students are urged to make advising appointments well prior to the registration period which opens near the 12th week of the semester. Prior to these appointments, an extensive set of advising notes for the upcoming semester are made available by the ITM Director of Undergraduate Advising and all undergraduates are advised by email to read these notes prior to coming to their advising appointment. A copy of these notes are included as Appendix H. It is Department policy that to the maximum extent possible advising appointments are conducted in person, but under exigent circumstances may be done by phone or email. Digital notes are used to document any advising discussions for review by the student and other advisors.

Continuing students follow the ITM curriculum that was in place when he or she began studies at IIT. During a student’s (new student or transfer student) initial advising session with their advisor, they are informed of the current ITM curriculum in Degree Works; usually this is the one printed in the current IIT Undergraduate Bulletin.

When a student has completed two years of study (or around 60-70 credit hours), Undergraduate Academic Affairs completes an “Official Academic Audit” (see sample in Appendix I) for the student’s chosen major and sends a copy to the student and Department. The “Official Academic Audit” is used by the advisor and updated, with the student, in each advising session. This audit is officially updated by Undergraduate Academic Affairs whenever the student requests it and also when the student applies for graduation.

Any modifications to the ITM Undergraduate Curriculum are posted to the Department Blog with appropriate effective dates, and the Undergraduate Studies Committee and the Office of Undergraduate Academic Affairs are notified as well. If modifications are extensive, approval by the Undergraduate Studies Committee, the University Faculty Council, the university Faculty, and the Board of Trustees will be obtained; the level of approval is based on the magnitude of the change. Curriculum modification and changes may be reflected in online revisions to the
Undergraduate Bulletin, issued by Undergraduate Academic Affairs between the normal biennial publication cycle of the Bulletin.

Other Advising Related Items

- Advisors are aware of the various student assistance services available on campus (Academic Resource Center, Student Health and Wellness Center, Career Management Center, Disability Resources, Residence Hall Advisors, and the Counseling Center).
- Early Warning – As part of a school wide retention program, 1xx and 2xx level (and some upper level) class faculty report poor attendance, assignment, quiz and exam grades every week through an automated email collection system, which is then shared with as(Academic Resource Center) tutoring usage is also collected and shared. This allows early intervention for at risk students. Midterm Grades are also submitted in all 1xx and 2xx level courses, and this is also shared with a student’s advisor.
- Academic Standing Review – After every semester’s grades are reported, the ITM Director of Undergraduate Advising communicates with the Associate Provost to discuss students that are candidates for academic probation or dismissal (as defined in the Undergraduate Bulletin). Students on probation are limited to 15 hours in the next term, and are noted for additional oversight by advisors. Some students are required to take additional classes (GLS 180, GLS 181, GLS 227) as part of our General Learning Strategies Program, also known as the Kedge program—a kedge is a small anchor used to move a ship. First-year students whose GPA at the end of the first semester is below 2.0 may be encouraged to enroll in the course PSYC 180, Early Adulthood, to assist them in their transition from secondary to higher education. Additional advising discussions are also had with students who get a D or E in a class, when possible retakes are discussed.
- The Career Management Center provides students with career related seminars, career fairs, and job listings.
- The ACM Employment Seminar, held every semester, is another forum where students are able to meet with professionals (usually alumni) and discuss career options.
- The School of Applied Technology provides professional counseling and instruction in resume preparation for students in the college, including students in Information Technology and Management.

E. Work in Lieu of Courses

IIT will award credit for CEEB Advanced Placement (AP) examinations, the higher level (HL) International Baccalaureate examinations and the General Certificate of Education (GCE) examinations. Credit will vary based on test score. Credit may also be accepted, based on appropriate documentation and scores, for DANTES, military experience, and CLEP. IIT will also award credit by examination, and selected industry certifications may be accepted by the ITM Department as evidence of completion of the examination. IIT does not grant credit for vocational courses or life/work experience.

F. Graduation Requirements

Bachelor of Information Technology and Management total hours 127

- ITM Requirements 38 hours - ITM 100, 301, 311, 312, ITMD 361, 362, 411, 421, ITMM 471, ITMO 440, 456, ITMS 448, ITMT 430
- ITM Electives 18 hours (Select courses from ITM, ITMD, ITMM, ITMO, ITMS, ITMT, and TECH)
The Office of Undergraduate Academic Affairs is responsible for certifying that an individual student has satisfied the prescribed curriculum for a Bachelor’s degree. When necessary, the associate chair of the major academic department provides assistance in the verification process.

An academic audit provides a summary of a student’s academic status to date and lists the courses to be completed in order to receive a degree. Students who have completed at least 60 semester hours (including applicable transfer credit) will receive an audit from the Office of Undergraduate Academic Affairs. After receiving their first audit, students may request periodic updates. Students and faculty advisors also have access to Degree Works, the online degree audit/advising system that is maintained by the Office of Undergraduate Academic Affairs. This system provides an unofficial audit to assist with academic advising.

After a student submits an application for degree conferral, a graduation audit is completed and a letter, which indicates the remaining requirements for the degree, is sent to the student. The final audit is completed when the grades for the semester are recorded and, if all requirements are completed, the degree is awarded.

_G. Transcripts of Recent Graduates_

The program will provide transcripts from some of the most recent graduates to the visiting team along with any needed explanation of how the transcripts are to be interpreted when requested by the program evaluation team chair.
CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement
To provide distinctive and relevant education in an environment of scientific, technological, and professional knowledge creation and innovation.

B. Program Educational Objectives
The mission of the Information Technology and Management program is to educate and inform students to prepare them to assume technical and managerial leadership in the information technology field and to advance knowledge through research and scholarship.

The Bachelor of Information Technology and Management produces graduates who are able to:

- Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.
- Identify and analyze user needs, identify and define computing requirements appropriate to the problem solution, and take them into account in the selection, creation, evaluation, and administration of computer- and network-based systems.
- Apply current technical and mathematical concepts and practices in the core information technologies and recognize the need to engage in continuing professional development.

To meet these goals, graduates must demonstrate knowledge and proficiency in these areas:

- Information technology basics including hardware and operating systems
- Application development and programming
- Human-Computer interaction
- Databases and data management
- Networking and communications
- Websystems
- Cybersecurity
- Professionalism

The public can find these objectives on the mission page of the Department of Information Technology and Management (http://appliedtech.iit.edu/information-technology-and-management/about/mission) and on page 116 of the current IIT Undergraduate Bulletin (http://web.iit.edu/sites/web/files/departments/academic-affairs/Undergraduate%20Academic%20Affairs/pdfs/ugbulletin14-16.pdf)

C. Consistency of the Program Educational Objectives with the Mission of the Institution
The key ideas in IIT’s mission are:
“distinctive” – We believe the combination of breadth and depth of our course requirements, the focus on industry experience among our faculty, and our strong emphasis on information technology as integral and essential to facilitation of business processes clearly makes the Bachelor of Information Technology and Management degree distinctive.

“relevant” – Students in the degree are actively learning to solve problems and provide solutions for a broad range of constituencies which includes business, industry, government, non-profit organizations, and individuals. They learn how to stay abreast of technological developments to allow them to employ the latest tools and methods to provide these solutions.
“innovation” – The interdisciplinary nature of the university’s signature undergraduate Interprofessional Projects (IPROs), the focus on creating innovative answers for business problems in ITM courses, the continuous updating of ITM electives, and the offering of a dedicated course in business innovation ensure that students understand the value of innovation in whatever career they pursue.

D. Program Constituencies
The key constituents of the Bachelor of Information Technology and Management degree are:

- Students
- Faculty
- Alumni
- Business, Industry, and Government Partners

The program educational objectives align with each of these constituencies.

Students clearly have an interest in learning both the breadth and depth of information technology, as well as exposure to problem solving, innovation and professional development. A productive career in information technology does not result from mere knowledge of the technologies, and our program objectives clearly demonstrate that we value a broader set of qualities in our graduates.

Faculty are well served by ensuring that the foundations of information technology are taught as the students they work with will be capable of designing complex information systems and ultimately will serve them well either in post-graduate employment or in further graduate studies. Additionally, faculty are able to propose and develop new electives in the latest areas in the field which for our full-time faculty helps them to stay on top of trends, and for our part–time faculty allows them to impart the latest knowledge in their field to our students.

Alumni are clearly influenced by the reputation of our department. We believe achieving our program objectives will produce strong graduates. Our alumni frequently seek out undergraduates for internship or full time opportunities, knowing that success in our program ensures a successful employee.

Business, Industry, and Government Partners rely upon graduates from IIT for additions to their workforce. Clearly, the ability of these students to adapt to new technology is paramount. The program is fortunate to have a strong industry advisory function in the School of Applied Technology Board of Overseers, who provide oversight for all of the degree programs in the college. The Department also actively engages with these constituents through membership and active involvement in organizations and events such as the Illinois Technology Foundation, the Illinois Technology Association, the Chicago Premier CIO Forum, and the Chicago-area Technology Executives Club.

E. Process for Review of the Program Educational Objectives
The constituents driving the review and possible update of our program educational objectives are the IIT administration and trustees who develop IIT’s mission and vision as approved by IIT faculty, and the School of Applied Technology Board of Overseers who meet periodically and help set the direction of the ITM Department. The university also engages in peer review through the use of External Program Reviews, chaired by a Trustee of the university and conducted by academic leaders from other institutions in the same disciplines as the departments under review. Our most recent External Program Review was conducted in April 2014 and is included as
Appendix E. The ITM Curriculum Committee considers feedback from all of these sources as a regular part of their deliberations and uses this to help shape the direction and focus of the curriculum, and to conduct periodic reviews of our overall objectives to ensure we are meeting the needs of all of our constituencies.
CRITERION 3. STUDENT OUTCOMES

A. Student Outcomes
The Department embraces the Student outcomes suggested in the ABET Criteria. Consequently, the program must enable students to attain, by the time of graduation:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical and mathematical concepts and practices in the core information technologies and recognize the need to engage in continuing professional development.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
(l) An ability to effectively integrate IT-based solutions into the user environment.
(m) An understanding of best practices and standards and their application.
(n) An ability to assist in the creation of an effective project plan.

B. Relationship of Student Outcomes to Program Educational Objectives

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<thead>
<tr>
<th>Program Educational Objective</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.</td>
<td>a, b, c, i</td>
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<td>b, c, i, k</td>
</tr>
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<td>a, h, j</td>
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C. Process for the Establishment and Revision of the Student Outcomes

The constituents driving the review and possible update the student outcomes are ABET (who periodically update the suggested student outcomes/characteristics with industry input), the School of Applied Technology Board of Visitors, and feedback from our recent alumni surveys. The ITM Curriculum Committee considers feedback from these constituents about every three years. Any changes are documented in records of the Curriculum Committee.

D. Enabled Student Characteristics

The ITM department utilizes all of the characteristics suggested in the ABET criteria as our student outcomes. Details are in the following section, Criterion 5.A. below on how our program curriculum enables each characteristic.
CRITERION 4. CONTINUOUS IMPROVEMENT

A. Student Outcomes

ITM Undergraduate Program Evaluation is an ongoing, overlapping process in which new goals are established each year in addition to implementation of the previous year's recommendations.

The ITM program has, for the last sixteen semesters, achieved one of the best student evaluation ratings both for instructor teaching and course content. The curriculum oversight committee reviews the student responses, makes teaching recommendations for the next semester, and provides feedback to individual faculty. The oversight committee consists of Department Chair, Dr. Carl Carlson, Associate Chair, Raymond Trygstad, and SAT Director of Academic Affairs, Madeleine England.

Each semester the Director of Academic Affairs, Madeleine England, conducts reviews of the grade distribution for each course to check for irregularities and to verify grades for students at academic risk. For those students whose performance is questionable, she consults with their instructors and works with the student on an individual plan for performance improvement.

Data Collection

Academic Year 2013/2014

For each ITM course a faculty member was assigned responsibility for creation of the course syllabus and prescribed learning outcomes.

For an ITM course taught by more than one faculty member, a course coordinator was named and made responsible for the creation of a common course syllabus and prescribed learning outcomes.

Current ITM students were surveyed to find out what topics and technologies they would like to see in the curriculum.

Fall Semester 2014

All undergraduate level course syllabi were reviewed and edited to ensure standardization in formatting, measurable student objectives, and clear grading rubrics. All faculty and course coordinators were provided training in ABET IT expectations for course syllabi.

Graduating seniors were asked to evaluate the entire ITM Program and to provide feedback on whether or not the ITM degree met their program expectations. This feedback is being used to make future curriculum adjustments and to note market changes, ensuring relevancy in ITM program offerings. Survey results are included in Criterion 4.C. below.

Two courses were chosen as a pilot for an ITM specific course evaluation. In these courses, students fill out a more in-depth course evaluation in addition to the University-wide evaluation tools. This data will allow us to hone in on course and faculty strengths and weaknesses, and provides a set of criterion that can be used to evaluate all ITM courses. Additionally, in order to allow for anonymity, course evaluations were distributed by departmental representatives without the instructor in the room. Once completed, all evaluations were placed in an envelope, sealed, and delivered directly to the Department Manager, Amber Chatellier. After departmental review, the evaluation data was provided to...
each instructor. An evaluation sample and tabulation of the results will be available during the site visit.

One course was used as a test for tracking final exam data. In this course, the instructor tabulated the score achieved by every student for every individual short answer question on the final exam. That data is then averaged and is a measure for student success on each question. The instructor can use that information to then make adjustments to course content for the next term. Exam tabulation results will be available during the site visit.

Spring Semester 2015

All undergraduate level course syllabi were reviewed and edited to ensure standardization in formatting, measurable student objectives, and clear grading rubrics. All faculty and course coordinators were provided training in ABET IT expectations for course syllabi.

Members of the curriculum oversight committee made unannounced class visits to validate that the course is following syllabus timelines, to assess whether or not the instructor is teaching to the course objectives, and to observe student engagement. Additionally, these visits serve as a tool to assess teaching style, course design, and the validity of course materials. Following these visits the committee provides feedback to the instructor. The Visit Observation Form and this semester’s results will be available during the site visit.

Graduating seniors were again asked to evaluate the entire ITM Program and to provide feedback on whether or not the ITM degree met their program expectation. This feedback is being used to make future curriculum adjustments and to note market changes, ensuring relevancy in ITM program offerings. Survey results will be available during the site visit.

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Fall Semester 2015

Members of the curriculum oversight committee will continue to make class visits and graduating senior surveys will continue to be given as in previous semesters.

Faculty will be asked to give pre- and post-, non-graded exams to validate that the student outcomes for their course are achieved.

We will expand the use of the ITM-specific course evaluation to six additional courses, or eight total courses for the term.
We will continue to track final exam success in one course to discern whether this is a useful tool across all classes.

**B. Continuous Improvement**

Constant and ongoing feedback is the basis for continuous improvement in our department. In addition to the concrete items listed above, we have implemented the following:

*Evaluations*: At the department level we send out multiple reminders to students to complete the University course and instructor evaluations every term. In addition, many of our faculty also request students complete a separate evaluation very specific to the course they just completed. Finally we requested that graduating students complete a program evaluation. This overarching evaluation allows us to gain insight on what our students find the most relevant and where we need to improve.

*Grievance Process*: In order to address specific student concerns, we have created a path and process for students to express grievances and concerns. Students can begin by discussing concerns with Program Manager, Amber Chatellier. After Amber, students can speak with Associate Chair, Raymond Trygstad. Finally, issues that are not resolved within the department will be addressed by SAT Director of Academic Affairs, Madeleine England. The creation of a set path has provided an “open door” culture that allows students multiple opportunities to voice concerns and criticism in a safe and non-judgmental environment.

Over the last two academic years we have gathered the feedback received from students, faculty and other University personnel and made program improvements.

Based on program reviews in 2013/2014, we proposed changes to the graduate curriculum that we feel will have a very positive impact on undergraduate education. Though IIT allows graduate students to take up to four 4xx level courses as part of their master degree program, we were given approval to allow only 5xx level courses within the ITM masters degree program. This change enables faculty to focus the learning objectives for all 4xx level courses on the educational needs of our undergraduate students. Additionally, it limits the enrollment levels of all 4xx level courses to facilitate individualized learning.

Undergraduate students admitted to the co-terminal bachelor/master degree program are permitted to take three 5xx level elective courses that can be applied toward their bachelor degree and master degree program requirements.

Based on program reviews in 2014/2015 we proposed the following undergraduate course changes:

- ITMD 434, Human/Computer Interaction, has been restructured as ITMD 362, Human/Computer Interaction and Web Design.
- ITMD 461, Internet Technologies and Web Design, has been restructured as ITMD 361, Fundamentals of Web Development.
- We have eliminated two six-hour system administration courses, ITM 451 Distributed Workstation System Administration (Microsoft Windows), and ITM 452 Client-Server System Administration (UNIX/Linux) and replaced them with the three-hour courses ITMO 433 Enterprise Server Administration, ITMO 450 Enterprise End-User System Administration, and ITMO 453 Open Source Server Administration.
We have added a key security management course, ITMS 484 Governance, Risk and Compliance; this course had been previously offered as a topic in ITMS 479 Topics in Information Security.

We have added a program capstone course, ITMT 430, System Integration.

We have tested a new date management course, Big Data, in the ITM 469 Topics in Application Development course.

C. Additional Information

In this section, we identify some of the data being collected as part of our assessment processes.

University Sponsored Online Student Surveys

Each semester the university sponsors an online student survey that asks students to assess each course they are taking, assess the effectiveness of the instructor teaching that course, and submit comments about the course. For the last sixteen semesters, the ITM program has received one of the top ratings in both categories. The comments section for each course always elaborates on the student’s reasoning behind their assessment. We have been very impressed by the time and effort put in by our students to provide us with meaningful and thoughtful feedback on our courses. We pay a lot of attention to these comments. Representative survey results are included as Appendix F.

Graduating ITM Student Survey

In Fall of 2014 the ITM program initiated a survey of its graduating students to get feedback on the ITM program. Here are the results of the Fall 2014 survey. We are waiting for the results of the Spring 2015 survey and will have it for the ABET IT Assessment Visit and to assess any changes we might need to make regarding how we approach “Soft Skill Development”.

Satisfaction with ITM program

Comprehensive set of relevant courses .......................................................... 4.7/5.0
Faculty are effective teachers ....................................................................... 4.2/5.0
Total .......................................................................................................... 4.5/5.0

Distinctive Real World ITM Educational Experience

Faculty bring real world experience to the classroom ................................... 4.6/5.0
Real world student projects are relevant to their career objectives .............. 4.0/5.0
Students are challenged to apply their knowledge to real world problems ... 3.7/5.0
Total .......................................................................................................... 4.1/5.0

Soft Skill Development

Students learn to collaborate on real world projects ................................. 3.9/5.0
Students learn to develop leadership skills .................................................. 3.3/5.0
Students learn to develop communication skills ....................................... 3.8/5.0
Students learn to develop problem solving skills ..................................... 4.1/5.0
Students learn to develop innovation skills ................................................. 3.6/5.0
Total .......................................................................................................... 3.7/5.0

Career Opportunities

Graduates find rewarding opportunities in industry ................................. 4.2/5.0
Unannounced Peer Faculty Classroom Observation Visits
In Spring 2015, ITM initiated a process whereby members of the Curriculum Oversight Committee each made classroom visits to four different courses. Over the course of two years, it is hoped that all classrooms can be visited. Feedback from these visits were shared with the faculty teaching those courses. The Visit Observation Form and this semester’s results will be available during the site visit.

Individualized Course Assessment Questionnaires
Faculty have been encouraged to develop either formal or informal feedback approaches for courses that they teach. The School of Applied Technology Director of Academic Affairs, Madeline England has developed an assessment questionnaire used to provide instructor feedback. In the future, we might want to focus on courses in the curriculum where we can gather student feedback on issues such as (1) have students experienced an improvement in their programming skills after a sequence of programming courses, (2) have their communication skills improved after a sequence of courses in which students are required to demonstrate their communication skills, and (3) have students demonstrated in the Systems Integration the ability to integrate concepts developed in earlier application oriented courses.
CRITERION 5. CURRICULUM

A. Program Curriculum
Commences on next page following.
## Table 5-1 Curriculum

### Bachelor of Information Technology and Management (8 Semester Program)

<table>
<thead>
<tr>
<th>Course (Department, Number, Title)</th>
<th>Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.</th>
<th>Subject Area (Credit Hours)</th>
<th>Last Two Terms the Course was Offered: Year and, Semester, or Quarter</th>
<th>Average Section Enrollment for the Last Two Terms the Course was Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-ITM 301 Intro to Computer Operating Systems and Hardware I</td>
<td>R</td>
<td>Math &amp; Sciences, 3-F</td>
<td>F14,S15</td>
<td>17</td>
</tr>
<tr>
<td>1-ITMD 421 Data Modeling and Applications</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>24³</td>
</tr>
<tr>
<td>1-Natural Science or Engineering Elective</td>
<td>R</td>
<td>4</td>
<td>F14,S15</td>
<td>35</td>
</tr>
<tr>
<td>1-Humanities 100/200 level Elective</td>
<td>SE</td>
<td>4</td>
<td>F14,S15</td>
<td>20</td>
</tr>
<tr>
<td>2-Social or Behavioral Science Elective</td>
<td>SE</td>
<td>4</td>
<td>F14,S15</td>
<td>30</td>
</tr>
<tr>
<td>2-ITM 100 Intro to the Profession of Information Technology</td>
<td>R</td>
<td>2-F</td>
<td>S14,S15</td>
<td>14</td>
</tr>
<tr>
<td>2-ITM 311 Introduction to Software Development</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>14</td>
</tr>
<tr>
<td>2-Mathematics Elective (MATH 320 Discrete Math recommended)</td>
<td>SE</td>
<td>3</td>
<td>S14,S15</td>
<td>32</td>
</tr>
<tr>
<td>2-Natural Science or Engineering Elective</td>
<td>SE</td>
<td>4</td>
<td>F14,S15</td>
<td>35</td>
</tr>
<tr>
<td>3-ITM 312 Introduction to Systems Software Programming</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>13</td>
</tr>
<tr>
<td>3-ITMM 471 Project Management for Info Technology</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>18</td>
</tr>
<tr>
<td>3-ITMO 440 Introduction to Data Networks and the Internet</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>19</td>
</tr>
<tr>
<td>3-Natural Science or Engineering Elective</td>
<td>R</td>
<td>3</td>
<td>F14,S15</td>
<td>35</td>
</tr>
<tr>
<td>3-Social or Behavioral Science Elective (Upper Level 300+)</td>
<td>SE</td>
<td>3</td>
<td>F14,S15</td>
<td>35</td>
</tr>
<tr>
<td>4-ITMD 411 Intermediate Software Development</td>
<td>R</td>
<td>3-A</td>
<td>F14,S15</td>
<td>29³</td>
</tr>
<tr>
<td>4-ITMO 456 Introduction to Open Source Operating Systems</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>16³</td>
</tr>
<tr>
<td>4-ITMD 361 Fundamentals of Web Development</td>
<td>R</td>
<td>3-F</td>
<td>F14,S15</td>
<td>See note 4</td>
</tr>
<tr>
<td>4-ITM Elective</td>
<td>SE</td>
<td>3-A</td>
<td>F14,S15</td>
<td>5</td>
</tr>
<tr>
<td>4-Mathematics Stats Elective (BUS 221, MATH 425, PSYC 203)</td>
<td>SE</td>
<td>3</td>
<td>S14,S15</td>
<td>39</td>
</tr>
<tr>
<td>4-Minor Elective</td>
<td>SE</td>
<td>3</td>
<td>F14,S15</td>
<td>20</td>
</tr>
<tr>
<td>5-ITM Elective</td>
<td>R</td>
<td>3-A</td>
<td>F14,S15</td>
<td>5</td>
</tr>
<tr>
<td>5-ITM Elective</td>
<td>R</td>
<td>3-A</td>
<td>F14,S15</td>
<td>5</td>
</tr>
<tr>
<td>5-Social or Behavioral Science Elective (Upper Level 300+)</td>
<td>SE</td>
<td>3</td>
<td>F14,S15</td>
<td>35</td>
</tr>
</tbody>
</table>
1. **Required** courses are required of all students in the program, **elective** courses (often referred to as open or free electives) are optional for students, and **selected elective** courses are those for which students must take one or more courses from a specified group.

2. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the maximum enrollment in each element. For selected elective courses, indicate the maximum enrollment for each option.

3. Enrollment in terms before Spring 2015 term includes graduate students.

4. ITMD 361 is a new version of the introductory web development class that has not yet been offered. Enrollment indicated is for the previous course, ITMD 461.

5. Average enrollment in electives is low because most upper-level electives share a common lecture and instructor with graduate sections of the course. Without our large graduate enrollment we would be unable to provide the breadth of electives made available to our undergraduates.

6. ITMD 362 is a new version of the human/computer interaction class that has not yet been offered. Enrollment indicated is for the previous HCI course, ITMD 434.

7. ITMT 430 System Integration is a new capstone course to be offered for the first time in Spring 2016.
ITM Requirements 38 hours ITM 100, 301, 311, 312, ITMD 361, 362, 411, 421, ITMM 471, ITMO 440, 456, ITMS 448, ITMT 430

ITM 100, ITMD 362 and ITMT 430 are offered only in the Spring, and ITMS 448 is offered only in the Fall All other courses are normally offered every term

ITM Electives 18 hours

- Select from ITMD, ITMM, ITMO, ITMS, ITMT, and TECH
- The following electives are normally offered every term: ITMD 415 Advanced Software Development, ITMD 455 Open Source Intelligent Device Applications, ITMM 470 Fundamentals of Management for Technology Professionals, and ITMM 482 Business Innovation
- The following electives are offered based on student or faculty demand: ITM 300 Communication in the Workplace, ITM 497 Independent Study, ITMD 469 Topics in Application Development, ITMT 491 Undergraduate Research, ITMT 495 Topics in Information Technology, and TECH 497 Special Projects
- Approximately ten graduate-level ITM elective courses are offered every semester which undergraduates may take with permission of their adviser. Offerings are determined by the ITM Department based on current graduate programs of study, historical demand, as well as faculty preferences.
- Seven entirely optional specializations are available in the areas of Data Management, IT Entrepreneurship and Management, Networking and Communications, Software
Development, System Administration, Systems Security, and Web Design and Application Development. These specializations are defined by the selection of four of the six ITM elective courses. As these are optional they are not considered separate curricular tracks.

Mathematics Requirements 6 hours
- A mathematics elective at the level of MATH 119 or above; MATH 230 Discrete Mathematics is strongly recommended and is offered every other semester. In fall of 2016 we expect to make MATH 230 mandatory.
- A Statistics Elective: BUS 221, PSYC 203 or MATH 425. PSYC 203 is offered every semester and BUS 211 and MATH 425 are offered every other semester.

Natural Science and Engineering Requirements 11 hours
- EG 225 Engineering Graphics for Non-Engineers is recommended and is offered every semester. Follow-on EG electives, EG 325 and EG 425, are also offered every semester.
- CHEM 122/124 Principles of Chemistry are offered every semester.
- BIOL 105 Introduction to Biology or BIOL 107 General Biology Lectures and BIOL 114-Introduction to Human Biology or BIOL 115 Human Biology are offered every other semester. A separate laboratory section is available for each course.
- PHYS 120-Astronomy is offered every third semester.

Humanities and Social or Behavioral Science Requirements 21 hours
- 80-90 Humanities and Social Science electives are offered every term
- PSYC 301 Industrial Psychology is recommended

Interprofessional Projects 6 hours
- 30-40 different Interprofessional Projects (IPROs) are offered every semester across a wide variety of topics and application areas. These projects develop communication, teamwork, and leadership skills, as well as an awareness of economic, marketing, ethical, and social issues within the framework of a multidisciplinary team project. The project teams will be integrated across academic programs and at different levels within programs.

Minor Electives 15 hours
- A minor consists of 15 hours or more of study in a field of study outside of students’ major department. IIT offers a broad range of minors listed starting on page 162 of the current undergraduate bulletin. Students transferring into the ITM program with more than 30 semester hours of credit normally have the minor requirement waived

Free Electives 12 hours
- Students may choose any course for free electives except for remedial courses.
2. Describe how the curriculum aligns with the program educational objectives.

<table>
<thead>
<tr>
<th>Program Educational Objective</th>
<th>Required Courses Supporting the Objective</th>
</tr>
</thead>
</table>
| Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals. | ITM 100 Intro to Information Technology as a Profession  
ITMD 411 Intermediate Software Development  
ITMD 421 Data Modeling & Applications  
ITMT 430 Systems Integration  
IPRO 397/497 Interprofessional Project |
| Identify and analyze user needs, identify and define computing requirements appropriate to the problem solution, and take them into account in the selection, creation, evaluation, and administration of computer- and network-based systems. | ITM 100 Intro to Information Technology as a Profession  
ITM 311 Introduction to Software Development  
ITMD 362 Human-Computer Interaction and Web Design  
ITMO 440 Introduction to Data Networking & the Internet  
ITMO 456 Introduction to Open Source Operating Systems  
ITMS 448 Cyber Security Technologies  
ITMT 430 Systems Integration |
| Apply current technical and mathematical concepts and practices in the core information technologies and recognize the need to engage in continuing professional development. | ITMD 411 Intermediate Software Development  
ITMD 421 Data Modeling & Applications  
ITMM 471 Project Management for ITM  
ITMO 440 Introduction to Data Networking & the Internet  
ITMT 430 Systems Integration |

3. Describe how the curriculum and its associated prerequisite structure support the attainment of the student outcomes:

Students start out with two introductory programming courses exposing them to different languages and development environments (ITM 311/ITM 312), leading to an intermediate level programming course (ITM 411); an introductory web development course (ITMD 361) leading to an HCI and web design course (ITMD 362); an introductory networking course (ITMO 440) leading to a cyber security technology course (ITMS 448); and additional courses adding breadth of knowledge (ITMD 421, ITMM 471, ITMO 456) leading to the capstone system integration course (ITMT 430).

As seen below, nearly all student outcomes are supported at varying required course levels with students building expertise as they progress. Note that the university-required interprofessional project courses contribute significantly to attainment of the outcomes. Outcome (j) is broken down into five outcomes for clarity.

<table>
<thead>
<tr>
<th>Student Outcomes</th>
<th>Required Courses Supporting the Outcome</th>
</tr>
</thead>
</table>
| (a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline | ITM 311 Introduction to Software Development  
ITM 312 Introduction to Systems Software Programming  
ITMO 440 Introduction to Data Networking & the Internet  
ITMT 430 Systems Integration |
<table>
<thead>
<tr>
<th>Student Outcomes</th>
<th>Required Courses Supporting the Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) An ability to analyze a problem, and identify and define the computing</td>
<td>ITM 100  Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td>requirements appropriate to its solution</td>
<td>ITM 311  Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITM 312  Introduction to Systems Software Programming</td>
</tr>
<tr>
<td></td>
<td>ITMD 361 Fundamentals of Web Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMD 411 Intermediate Software Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
</tr>
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<td></td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
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<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(c) An ability to design, implement, and evaluate a computer-based system,</td>
<td>ITM 100  Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td>process, component, or program to meet desired needs</td>
<td>ITM 301  Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
<tr>
<td></td>
<td>ITM 311  Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITM 312  Introduction to Systems Software Programming</td>
</tr>
<tr>
<td></td>
<td>ITMD 361 Fundamentals of Web Development</td>
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<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
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<td></td>
<td>ITMD 411 Intermediate Software Development</td>
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<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
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<td></td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
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<td></td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
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<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<td></td>
<td>ITMT 430 Systems Integration</td>
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<tr>
<td>(d) An ability to function effectively on teams to accomplish a common goal</td>
<td>ITM 100  Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
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<td></td>
<td>ITMM 471 Project Management for ITM</td>
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<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<td></td>
<td>ITMT 430 Systems Integration</td>
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<tr>
<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
<tr>
<td>(e) An understanding of professional, ethical, legal, security and social</td>
<td>ITM 100  Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td>issues and responsibilities</td>
<td>ITM 301  Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
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<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
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<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
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<td></td>
<td>ITMM 471 Project Management for ITM</td>
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<td></td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
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<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<td></td>
<td>ITMT 430 Systems Integration</td>
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<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
<tr>
<td>Student Outcomes</td>
<td>Required Courses Supporting the Outcome</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(f) An ability to communicate effectively with a range of audiences</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td></td>
<td>ITMD 361 Fundamentals of Web Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMM 471 Project Management for ITM</td>
</tr>
<tr>
<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
</tr>
<tr>
<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
<tr>
<td>(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
<tr>
<td>(h) Recognition of the need for and an ability to engage in continuing professional development</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td></td>
<td>ITM 301 Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
<tr>
<td></td>
<td>ITM 311 Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 411 Intermediate Software Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
</tr>
<tr>
<td></td>
<td>ITMM 471 Project Management for ITM</td>
</tr>
<tr>
<td></td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
<tr>
<td>(i) An ability to use current techniques, skills, and tools necessary for computing practice.</td>
<td>ITM 301 Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
<tr>
<td></td>
<td>ITM 311 Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITM 312 Introduction to Systems Software Programming</td>
</tr>
<tr>
<td></td>
<td>ITMD 361 Fundamentals of Web Development</td>
</tr>
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<td></td>
<td>ITMD 411 Intermediate Software Development</td>
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<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
</tr>
<tr>
<td></td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
</tr>
<tr>
<td></td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
</tr>
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<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(j)(1) An ability to use and apply current technical concepts and practices in the core information technology of human computer interaction</td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(j)(2) An ability to use and apply current technical concepts and practices in the core information technology of information management.</td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(j)(3) An ability to use and apply current technical concepts and practices in the core information technology of programming.</td>
<td>ITM 311 Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITM 312 Introduction to Systems Software Programming</td>
</tr>
<tr>
<td></td>
<td>ITMD 411 Intermediate Software Development</td>
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<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>Student Outcomes</td>
<td>Required Courses Supporting the Outcome</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(j)(4) An ability to use and apply current technical concepts and practices in</td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
</tr>
<tr>
<td>the core information technology of networking.</td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(j)(5) An ability to use and apply current technical concepts and practices in</td>
<td>ITMD 361 Fundamentals of Web Development</td>
</tr>
<tr>
<td>the core information technology of web systems and technologies.</td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(k) An ability to identify and analyze user needs and take them into account</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td>in the selection, creation, evaluation and administration of computer-based</td>
<td>ITM 311 Introduction to Software Development</td>
</tr>
<tr>
<td>systems.</td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMD 411 Intermediate Software Development</td>
</tr>
<tr>
<td></td>
<td>ITMD 421 Data Modeling &amp; Applications</td>
</tr>
<tr>
<td></td>
<td>ITMM 471 Project Management for ITM</td>
</tr>
<tr>
<td></td>
<td>ITMO 440 Introduction to Data Networking &amp; the Internet</td>
</tr>
<tr>
<td></td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(l) An ability to effectively integrate IT-based solutions into the user</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td>environment.</td>
<td>ITM 301 Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
<tr>
<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(m) An understanding of best practices and standards and their application.</td>
<td>ITM 301 Intro to Contemp Operating Systems &amp; Hardware I</td>
</tr>
<tr>
<td></td>
<td>ITM 311 Introduction to Software Development</td>
</tr>
<tr>
<td></td>
<td>ITM 312 Introduction to Systems Software Programming</td>
</tr>
<tr>
<td></td>
<td>ITMD 361 Fundamentals of Web Development</td>
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<tr>
<td></td>
<td>ITMD 362 Human-Computer Interaction and Web Design</td>
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<td>ITMD 411 Intermediate Software Development</td>
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<td>ITMM 471 Project Management for ITM</td>
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<tr>
<td></td>
<td>ITMO 456 Introduction to Open Source Operating Systems</td>
</tr>
<tr>
<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
</tr>
<tr>
<td></td>
<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td>(n) An ability to assist in the creation of an effective project plan.</td>
<td>ITM 100 Intro to Information Technology as a Profession</td>
</tr>
<tr>
<td></td>
<td>ITMM 471 Project Management for ITM</td>
</tr>
<tr>
<td></td>
<td>ITMS 448 Cyber Security Technologies</td>
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<td>ITMT 430 Systems Integration</td>
</tr>
<tr>
<td></td>
<td>IPRO 397/497 Interprofessional Project</td>
</tr>
</tbody>
</table>

3. A flowchart or worksheet that illustrates the prerequisite structure of the program’s required courses is on the next page following.
Bachelor of Information Technology and Management
Required Course Prerequisite Flowchart

ITM Communication Courses
These courses contain a communication component (denoted with a “C”). As required by the IIT Common Core (general education), each department is required to have 15 credit hours in major courses that are “C” courses. Communication content is periodically reviewed by the Communication Across the Curriculum office. The Communication courses in Information Technology and Management include:

**Required Courses**
- ITM 100  Intro to Information Technology as a Profession
- ITMD 361  Fundamentals of Web Development
- ITMM 471  Project Management for ITM
- ITMS 448  Cyber Security Technologies

**Elective Courses**
- ITMD 422  Advanced Database Management
- ITMD 460  Fundamentals of Multimedia
- ITMD 462  Web Site Application Development
- ITMM 485  Legal & Ethical Issues in Information Technology
- ITMS 478  Cyber Security Management
IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

4. EAC Criteria: Not applicable

5. CAC Curriculum Criteria for Information Technology (5.a. and b.)
How our program meets the CAC Criteria requirements in terms of hours and depth of study for each curricular area specifically addressed by either the CAC general criteria or the applicable program criteria.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Area</th>
<th>Required Courses Meeting the Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Mathematics appropriate to the discipline beyond the pre-calculus level</td>
<td>MATH 230 Discrete Mathematics (3 hours) Statistics elective: choice of BUS 221, PSYC 203, or MATH 425 (3 hours)</td>
</tr>
<tr>
<td>5.a.</td>
<td>Coverage of the fundamentals of the core information technologies of</td>
<td></td>
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<tr>
<td>5.a.1-1</td>
<td>human computer interaction</td>
<td>ITMD 362 Human-Computer Interaction and Web Design (3 hours)</td>
</tr>
<tr>
<td>5.a.1-2</td>
<td>information management</td>
<td>ITMD 421 Data Modeling &amp; Applications (3 hours)</td>
</tr>
<tr>
<td>5.a.1-3</td>
<td>programming</td>
<td>ITM 311 Intro to Software Development (3 hours) ITM 312 Intro to Systems Software Programming (3 hours)</td>
</tr>
<tr>
<td>5.a.1-4</td>
<td>networking</td>
<td>ITMO 440 Intro to Data Networking &amp; the Internet (3 hours)</td>
</tr>
<tr>
<td>5.a.1-5</td>
<td>web systems &amp; technologies</td>
<td>ITMD 361 Fundamentals of Web Development (3 hours)</td>
</tr>
<tr>
<td>5.a.2</td>
<td>information assurance &amp; security</td>
<td>ITMS 448 Cyber Security Technologies (3 hours)</td>
</tr>
<tr>
<td>5.a.3</td>
<td>system administration and maintenance</td>
<td>ITM 301 Intro to Contemp Operating Systems &amp; Hardware (3 hrs) ITMO 456 Introduction to Open Source Operating Systems (3 hrs)</td>
</tr>
<tr>
<td>5.a.4</td>
<td>system integration and system architecture</td>
<td>ITM 100 Intro to Information Technology as a Profession (3 hours) ITMT 430 Systems Integration (3 hours)</td>
</tr>
<tr>
<td>5.b.</td>
<td>Advanced course work that builds on the fundamental course work to provide depth</td>
<td>ITMD 362 Human-Computer Interaction and Web Design (3 hours) ITMD 411 Intermediate Software Development (3 hours) ITMM 471 Project Management for ITM (3 hours) ITMT 430 Systems Integration (3 hours)</td>
</tr>
</tbody>
</table>

6. Describe the major design experience that prepares students for engineering practice: Not applicable

7. Cooperative education: IIT does not allow cooperative education in satisfaction of curricular requirements.

8. Materials (course syllabi, textbooks, sample student work, etc.), that will be available for review during the visit to demonstrate achievement related to this criterion:
   - All syllabi from Spring and Fall 2015
   - Representative graded student exams/projects from Fall 2014/Spring 2015 ITM courses
   - Graduating Senior Survey Results
   - ITM specific course evaluation sample and tabulation
   - Final exam data tabulation results
   - Classroom Visit Observation Form and Spring 2015 semester results

B. Course Syllabi
See Appendix A.
CRITERION 6. FACULTY

A. Faculty Qualifications

Every tenured faculty member holds a Ph.D. Every Industry and Adjunct Industry faculty member holds at least Master’s degree, and in many cases two or three Master’s degree, or a Ph.D. Every faculty member from the Dean on down has industry experience, and Industry faculty ranks are assigned based on demonstrated mastery of subject areas through industry experience. The ITM Faculty Handbook, which is currently in revision and will be provided during the site visit, includes criteria for academic ranks. Given the nature of the field of information technology, the industry experience of our faculty is a tremendous strength and a direct benefit to our students. When we begin to hire tenure-track faculty, we will continue to seek candidates who have this experience in addition to their earned doctorate.

B. Faculty Workload

The standard teaching load for full-time faculty is three courses with up to four classroom sections each semester. Faculty with administrative responsibilities such as the associate chair and laboratory directors each teach two courses per semester, and the chair teaches one course per term. University policy dictates that adjunct faculty may only teach two courses per semester but may teach up to four separate classroom sections, and adjunct faculty members who are full-time university staff members normally may only teach one course each semester. Exceptions to policy are made on occasion allowing regular adjunct faculty members to teach up to three courses and university staff adjunct faculty member to teach two courses. Graduate and undergraduate sections are combined in common lecture sections in some courses as well, but we are gradually moving away from this model as faculty resources allow. Graduate student are no longer allowed to enroll in undergraduate sections of any courses offered in our department, although allowing graduate students to enroll in 400-level sections continues to be common throughout the rest of the university.

Enrollment limits for courses are tailored on needs of the department and demonstrated ability of faculty members to handle sections with very large enrollments. Some very knowledgeable and experienced faculty have proven not to do well teaching sections with very large enrollments and we schedule them accordingly.

Many courses have online as well as classroom sections, and in some cases the number of online students will exceed the number of students in the live classroom. This requires faculty to make optimal use of teaching assistants and the of the Blackboard learning management system (LMS). There may be as many as three online sections; one for local online students, one as part of IIT’s India International program, and one for traditional distance learning students.

C. Faculty Size

The size of the full time faculty at six members is adequate and is comparable to similar programs at other institutions. Given both the breadth and the depth of our academic offerings, with as many as forty-five to fifty courses running each term, some with multiple lecture sections, we have been increasing the size of our adjunct faculty. We had eighteen teaching in fall of 2014, twenty teaching in spring of 2015, and twenty-five planned for fall of 2015. Not every adjunct faculty member teaches every semester, and there are normally twenty-two to
twenty-four associated with the department at any given time, increasing to twenty-eight this fall. If new student enrollment continues to grow at our present rate of nearly 30% each fall, we do estimate that we will need additional full time faculty to handle the additional teaching load, probably one additional full-time faculty member each year for the next five years.

**Faculty Involvement – Student Interaction**

All faculty are required to have a reasonable number of office hours depending upon the size of the class, usually 2-4 office hours per week, and also must promptly reply to e-mail messages, which is generally defined as within 24 hours.

There are also social interactions available for students and faculty such as the School of Applied Technology (SAT) picnic, new student breakfast, and SAT evening events such as parties, game nights, and movie nights.

**Faculty Involvement – Advising**

Professors Trygstad and Hajek handle all undergraduate advising. This is discussed in depth in Criterion 1.D. above.

**Faculty Involvement – Program Oversight**

Curricular design is based on feedback from students and alumni, industry input through interaction with the School of Applied Technology Board of Visitors and participation in I.T. industry events, trends seen in both industry and academic press, and contributions and counsel from adjunct faculty members who work full time in the industry. Curricular decisions are made by the Curriculum Committee, which consists of three full-time and three adjunct faculty members, with participation open to all full-time faculty members. The Committee engages a constant review of the program to ensure that is comprehensive, academically sound, and meeting the needs of the students as a pre-professional educational program. Any faculty member may propose curriculum revisions which are then considered and acted upon by the Committee.

A subcommittee of the Curriculum Committee, the Curriculum Oversight Committee, have been making unannounced class visits to validate that the course is following syllabus timelines, to assess whether or not the instructor is teaching to the course objectives, and to observe student engagement. Additionally, these visits serve as a tool to assess teaching style, course design, and the validity of course materials.

Faculty members are encouraged to propose new courses. In most cases the department will judge student interest and course effectiveness though an offering of the proposed course as an appropriate “topics” course in the applicable subject area.

**D. Professional Development**

There are many on campus teaching and advising seminars that are funded by the college or provost’s office and are available to all faculty. In addition, many faculty members regularly participate in I.T. industry activities and professional organizations such as USENIX, AITP, the Illinois Technology Foundation, the Illinois Technology Association and the Technology Executives Club.
E. Authority and Responsibility of Faculty

New courses can be proposed to the ITM Curriculum Committee by any faculty member, or through suggestions from the SAT Board of Visitors, and are sometimes offered as one of our sever topics courses, ITMD 419 Topics in Software Development, ITMD 469 Topics in Application Development, ITMS 479 Topics in Information Security, or as our general ITMT 495 Topics in Information Technology. A course syllabus is required to propose a course including course outcomes and relation to student outcomes and program educational objectives. Once a course shows good enrollment as well as good student evaluations, the Curriculum Committee can approve the new course to be adopted into the general curriculum, the course is assigned a permanent course number.

The ITM Curriculum Committee, in concert with the faculty and course coordinators, is responsible for evaluating the consistency and quality of the courses, their support of student outcomes and program educational objectives, and modifying the curriculum when necessary.

The ITM Curriculum Committee has the responsibility to define and revise student outcomes and program educational objectives, with input from ABET, the SAG Board of Visitors, and the School of Applied Technology and IIT strategic plans. The ITM Curriculum Committee has the responsibility to ensure students are obtaining student outcomes and program educational objectives, and has the ability to change courses and curriculum if necessary.

Any course changes need approval by the ITM Curriculum Committee, the Department Chair, and the Dean of the School of Applied Technology. Major curriculum changes need approval by the ITM Curriculum Committee, the ITM faculty, the IIT Undergraduate Studies Committee and the IIT Faculty Council. Any student outcome or program objective changes need approval by the ITM Curriculum Committee.
### Table 6-1. Faculty Qualifications

Department of Information Technology and Management, Illinois Institute of Technology

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Highest Degree Earned- Field and Year</th>
<th>Rank</th>
<th>Type of Academic Appointment</th>
<th>FT or PT</th>
<th>Years of Experience</th>
<th>Professional Registration/Certification</th>
<th>Level of Activity</th>
<th>Consulting/summer work in industry</th>
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<tbody>
<tr>
<td>Omar Aldawud</td>
<td>Ph.D. - Computer Science, 2002</td>
<td>A</td>
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<td>PT</td>
<td>20</td>
<td>N/A</td>
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<tr>
<td>Adarsh Arora</td>
<td>Ph.D. - Computer Science, 1978</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>27</td>
<td>N/A</td>
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<tr>
<td>Brian Bailey</td>
<td>Master - Information Technology &amp; Management, 2014</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>18</td>
<td>N/A</td>
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<tr>
<td>Carl Carlson</td>
<td>Ph.D. - Computer Science, 1972</td>
<td>P</td>
<td>T</td>
<td>FT</td>
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<td>ACM</td>
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<tr>
<td>Carol Davids</td>
<td>Master - Information Technology &amp; Management, 2003</td>
<td>P</td>
<td>NTT</td>
<td>FT</td>
<td>46</td>
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<tr>
<td>Shawn Davis</td>
<td>Masters - Information Technology &amp; Management, Specialization (Computer and Network Security) - 2012</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>8.5</td>
<td>GWAPT GCFE GCIH Security+ A+ FCC GIAC</td>
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<td>H</td>
</tr>
<tr>
<td>Madeleine England</td>
<td>Master - Information Technology &amp; Management, (IT Management &amp; Entrepreneurship), 2012</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>17</td>
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<tr>
<td>Bonnie Goins</td>
<td>M.S. - Information Science, 1996</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>30</td>
<td>CISSP BVQI CBCP CGEIT CRISC CISA CISM ITIL MBCI NSA PCIP</td>
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<tr>
<td>Jeremy Hajek</td>
<td>Master - Information Technology &amp; Management, 2007</td>
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<td>Dennis Hood</td>
<td>M.S. - Computer Science, 1992</td>
<td>A</td>
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<td>Faculty Name</td>
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<td>Rank</td>
<td>Type of Academic Appointment</td>
<td>FT or PT</td>
<td>Years of Experience</td>
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<td>Level of Activity</td>
<td>Consulting/summer work in industry</td>
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<tr>
<td>Peisong Huang</td>
<td>M.Phil. – Software Engineering, 1993</td>
<td>A</td>
<td>NTT</td>
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<tr>
<td>Sean Hughes-Durkin</td>
<td>Masters - Information Technology &amp; Management, Specialization (Computer and Network Security), 2010</td>
<td>A</td>
<td>NTT</td>
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<tr>
<td>Alan Johnston</td>
<td>Ph.D. - Electrical Engineering, 1994</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
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<tr>
<td>Sharan Kalwani</td>
<td>Master - Computer Science, 1987</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>28</td>
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<tr>
<td>Jason Lambert</td>
<td>M.S. – Computer Graphics Technology, 2010</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
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<td>M</td>
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<tr>
<td>Steven Lisitza</td>
<td>Master - Information Technology &amp; Management, 2014</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
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<td>EMCISA EMCCIS</td>
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<tr>
<td>Louis F. McHugh IV</td>
<td>Master - Cyber Forensics and Security, est. 2015 M.S. - Information Systems and Technology, 2010</td>
<td>A</td>
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<tr>
<td>Bruce Mueller</td>
<td>M.B.A - 1974</td>
<td>A</td>
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<td>Faculty Name</td>
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<td>Rank 1</td>
<td>Type of Academic Appointment(^2)</td>
<td>FT or PT(^3)</td>
<td>Years of Experience</td>
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<tr>
<td>Sheikh Shamsuddin</td>
<td>M.S. - Computer Science, 1986</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
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<td>ACE</td>
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<td>Scott Spyrison</td>
<td>Master - Information Technology &amp; Management, 2013</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>15</td>
<td>N/A</td>
<td>L</td>
<td>M</td>
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<tr>
<td>Raymond Trygstad</td>
<td>M.S. - Systems Management, (Information Systems Management) 1990</td>
<td>P</td>
<td>NTT</td>
<td>FT</td>
<td>27</td>
<td>iNet+ ACM AITP ISACA</td>
<td>M</td>
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<tr>
<td>Kevin Vaccaro</td>
<td>Master - Information Technology &amp; Management, 2006</td>
<td>A</td>
<td>NTT</td>
<td>PT</td>
<td>20</td>
<td>CEH v.8 FTK MPE Net+ A+ Security+ IEEE</td>
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</table>

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to be provided at the time of the visit.

1. Code: P = Professor   ASC = Associate Professor   AST = Assistant Professor   I = Instructor   A = Adjunct   O = Other
2. Code: TT = Tenure Track   T = Tenured   NTT = Non Tenure Track
3. At the institution
4. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.
## Table 6-2. Faculty Workload Summary

Department of Information Technology and Management, Illinois Institute of Technology

<table>
<thead>
<tr>
<th>Faculty Member (name)</th>
<th>PT or FT</th>
<th>Classes Taught (Course No./Credit Hrs.) Term and Year</th>
<th>Program Activity Distribution</th>
<th>% of Time Devoted to the Program</th>
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<tbody>
<tr>
<td>Omar Aldawud</td>
<td>PT</td>
<td>Fall 2014: ITM 311 (3 credit) ITMD 422 (3 credit) Spring 2015: ITMD 466/566 (3 credit) ITMD 527 (3 credit)</td>
<td>100 0 0</td>
<td>100</td>
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<tr>
<td>Adarsh Arora</td>
<td>PT</td>
<td>Fall 2014: ITMM 481/581 (3 credit) – Co-Taught</td>
<td>50 0 50</td>
<td>50</td>
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<tr>
<td>Brian Bailey</td>
<td>PT</td>
<td>Fall 2014: ITMD 461 (3 credit) Spring 2015: ITMD 461 (3 credit)</td>
<td>90 0 10</td>
<td>100</td>
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<tr>
<td>Carl Carlson</td>
<td>FT</td>
<td>Fall 2014: ITMM 481/581 (3 credit) Spring 2015: ITMT 531 (3 credit)</td>
<td>30 20 50</td>
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<tr>
<td>Carol Davids</td>
<td>FT</td>
<td>Summer 2014: ITM 594 (1-3 credit) ITMT 597 (1-3 credit) Fall 2014: ITMO 440/540 (3 credit) ITMO 546 (3 credit) ITMO 547 (3 credit) ITM 597 (1-3 credit) Spring 2015: ITMO 440/540 (3 credit) ITMO 546 (3 credit) ITMO 547 (3 credit)</td>
<td>40 30 30</td>
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</tr>
<tr>
<td>Shawn Davis</td>
<td>PT</td>
<td>Fall 2014: ITMS 448/548 (3 credit)</td>
<td>90 10 0</td>
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<tr>
<td>Madeleine England</td>
<td>PT</td>
<td>Summer 2014: ITMM 470/570 (3 credit) Fall 2014: ITMM 470/570 (3 credit) ITMM 482/582 (3 credit) Spring 2015: ITMM 470/570 (3 credit) ITMM 482/582 (3 credit)</td>
<td>60 10 30</td>
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<td>Bonnie Goins</td>
<td>PT</td>
<td>Summer 2014: ITMS 479/579 (3 credit) ITMM 574 (3 credit) Fall 2014: ITMM 586 (3 credit) TECH 581 (3 credit) Spring 2015: ITMS 484/584 (3 credit) ITMM 574 (3 credit)</td>
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<tr>
<td>Faculty Member (name)</td>
<td>PT or FT&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Classes Taught (Course No./Credit Hrs.) Term and Year&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Program Activity Distribution&lt;sup&gt;3&lt;/sup&gt;</td>
<td>% of Time Devoted to the Program&lt;sup&gt;4&lt;/sup&gt;</td>
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<td>Jeremy Hajek</td>
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<td>Dennis Hood</td>
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<td>Peisong Huang</td>
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<td>Sean Hughes-Durkin</td>
<td>PT</td>
<td>Fall 2014: ITMO 456 (3 credit) Spring 2015: ITMO 456 (3 credit) ITMS 458/558 (3 credit)</td>
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<td>Alan Johnston</td>
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<td>Sharan Kalwani</td>
<td>PT</td>
<td>Spring 2015: ITMD 469/569 (3 credit)</td>
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<td>Raj Krishnan</td>
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<td>Fall 2014: ITMD 463/563 (3 credit) Spring 2015: ITMD 464/564 (3 credit)</td>
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<td>Jason Lambert</td>
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<td>William Lidinsky</td>
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<td>PT or FT¹</td>
<td>Classes Taught (Course No./Credit Hrs.) Term and Year²</td>
<td>Program Activity Distribution²</td>
<td>% of Time Devoted to the Program⁴</td>
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<td>Luke Papademas</td>
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<td>Sheikh Shamsuddin</td>
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<td>William Slater III</td>
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<td>Raymond Trygstad</td>
<td>Summer 2014: ITMO 456 (3 credit) ITMT 491 (1-3 credit) Fall 2014: ITM 460 (3 credit) ITMS 478/578 (3 credit) ITMT 597 (1-3 credit) Spring 2015: ITM 100 (2 credit) ITMM 485/585 (3 credit) ITMD 556 (3 credit)</td>
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1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the Self-Study Report is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.
CRITERION 7. FACILITIES

A. Offices, Classrooms and Laboratories

Offices
Most full-time tenure and non-tenure track ITM faculty have their own offices allowing them to hold office hours for student questions or advising. All other ITM faculty have a shared office environment where they can hold office hours on the days of their courses at both the Main and Rice Campus.

Full-time ITM faculty have laptops, PCs, or workstations in their offices, access to computer classrooms, a high-speed black and white printer and a high-speed color printer in the department office, and access to laptops and projectors for use in classroom lectures or presentations. All ITM faculty have opportunities to record lectures or presentations for scholarly conferences using IIT Online. IIT Online offers instructional design services, which entail creating materials to assist in faculty course development. These design services include adding media to classroom instruction and producing sound pedagogical content. All faculty have access to channels in the university portal site, myIIT, for accessing their own class data, such as their class schedules and grading, and for advising students. Blackboard learning management software is available in myIIT. Blackboard accounts for faculty and students are created 4-5 weeks before the semester starts. Teaching assistants can be given access by the course instructor. Faculty members can request computer lab use for academic instruction through the university’s primary computing organization, the Office of Technology Services (OTS), or through the School of Applied Technology (SAT) at both Main and Rice Campuses.

Administrative staff in the ITM Department are also provided offices (or shared offices) and computers in the main office, and provide 9am-5pm coverage for student inquiries. Printers, copiers, fax machine and office supplies are available.

Academic Buildings
All academic buildings are fully equipped with 1Gbps network connectivity to the IIT backbone. Individual wired connections provide a minimum of 100Mbps connectivity with many having 1Gbps connections. All academic buildings have full wireless network connectivity at 54Mbps. All network infrastructure is protected via uninterruptable power supplies and are secured to prevent unauthorized access.

From 2008 to 2013, OTS upgraded the network services to the academic buildings as follows:

- Upgraded internet bandwidth to >2Gbps
  - 2008: 200Mbps
  - 2010: 300Mbps
  - 2010: 500Mbps
  - 2012: 1Gbps
  - 2013: 2Gbps
- Added a backup internet provider for redundancy
- Added a co-location presence in a Level(3) datacenter

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1 Include information concerning facilities at all sites where program courses are delivered.
IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

- Added an additional 1Gbps link to the Internet2 via the Chicago Starlight Facility on the Northwestern University Campus
- Upgraded wireless access, including:
  - 802.11n wireless access
  - Encrypted access
  - Joined and deployed ‘Eduroam’ to allow visiting faculty, students and researchers to have access to the IIT network as well as other institution networks when traveling
- Implemented IPv6 for all wired connections and externally via BGP
- Deployed IDS/IPS
- Added redundant connections to IIT’s other campuses located in Downtown Chicago, Wheaton, and Bedford Park.
- Connected the last IIT remote Campus, ID, to IIT Metropolitan infrastructure.
- Added redundant fiber connections on the main campus to complete the campus fiber ring reducing the possibility of an outage.
- Increased the throughput of IIT network connectivity to 10 Gbps.
- Implemented the next generation of hardware in IIT Data Centers that will support Openflow

Classrooms
IIT provides three types of classroom technologies: Standard AV equipped, online learning, and computer classrooms. All three types of rooms offer projection and audio systems that include a document camera, Blue Ray player, and connections for an instructor provided laptop computer or tablet. Some rooms also include DVD/VCR combinations for handling legacy technologies. All equipment is controlled from a Crestron touch-panel controller that is standardized across all IIT classrooms to insure a seamless interface for the instructors regardless of the room. These rooms are scheduled and managed by the Office of the Registrar.

The online learning rooms add remote controlled cameras, microphones, and confidence monitors that interact with Crestron HD Capture devices to record the instructor’s presentation. These rooms are controlled remotely by Production Assistants who handle the cameras and in insure the quality of the recording. Several rooms offer the capability to connect to IIT’s video conferencing system to allow real-time collaboration and interaction with guest speakers. These rooms are scheduled and managed by IIT Online.

The third type of classrooms are the PC classroom. These PC classrooms are computer labs equipped with a PC and projector for the instructor and individual computers for each student. This arrangement provides students with a hands-on learning experience. Recent upgrades include:
- 10 online learning rooms with lecture capture in the Stuart Building
- 5 online learning rooms with lecture capture in the E1 Building
- Upgraded 10 rooms in the Stuart Building and 18 rooms in E1 to HDMI connections
- Replaced projectors in Stuart, E1, Siegel, IIT Tower and Tech Central buildings
- Installed a new smart podium in the Siegel Hall auditorium
- Installed complete AV systems in the IIT Tower auditorium, IIT Tower 6th floor classrooms, and Tech Central classrooms.

These rooms are scheduled by the Office of the Registrar and managed by OTS.
School of Applied Technology Computer Laboratories
SAT operates and supports 12 computer labs between the Main and Rice campuses; all are usually available from 9am until 10pm. The labs are managed internally by full-time staff to provide a highly agile environment bases on the ever-changing technology needs of our students and classes. Most labs are equipped with reconfigurable workstations which allow staff to swap hard drives in 10 minutes or less to support specific instructional scenarios.

- Main campus has 5 labs with 60 workstations on a three year replacement cycle.
- The Rice Campus 7 labs with 90 workstations on a three year replacement cycle.

Additionally, SAT has an enterprise grade VMware farm with a SAN that supports a number of classroom functions and student projects. The VMware farm will accommodate about 300 virtual machines.

School of Applied Technology Provided Software
SAT technical services offers all of the following current software titles that specifically address ITM student needs.

- Microsoft Dreamspark Premium membership for all currently enrolled students and faculty. Providing 192 individual the files include all current Microsoft operating systems, servers, and application development tools, and include applications such as Windows 7, Windows 8.1, Windows 10, and Visual Studio.
- VMware software providing 21 different titles including VMware Workstation, ESXi, VCenter for example.
- Oracle Software—the ITM Department is an Oracle Academy member though a grant directly from Oracle. This grant provides our students and faculty with a number of different software, curriculum, training, and certification resources from Oracle.

These titles are reviewed every semester by the ITM IT Advisory Committee, and are updated after thorough testing for compatibility with existing lab hardware/software every summer.

Cyber Forensics and Security Laboratory (ForSec Lab)
This PC classroom located at the Rice Campus is equipped with a PC and projector for the instructor and individual computers with reconfigurable hard drives for each student. The lab provides students and research partners the opportunity to develop hands-on expertise working in the field of security, forensics, and disaster/data recovery. The ForSec Lab is built and configured to support the needs of multiple computer, network, and forensic projects.

ForSec Lab Computing Resources and Software
The Cyber Forensics and Security Lab provides a sandboxed environment where traffic throughout a network can be analyzed and filtered. Cyber intrusions and virus spread can be studied, as well as Malware and Spyware can be tested on multiple platforms. Equipment is easily introduced into several potential network configurations.

The Lab is equipped with multiple forensic workstations targeted to be compliant with National Institute of Standards and Technology (NIST) standards, and equipped to investigate multiple interface media.

25 PCs that can be booted into either Windows 8.1 or Kali Linux are loaded with a full complement of Forensics and teaching software including Matlab, WinHex, EnCase, and
ProDiscover Basic among others. The machines are re-imaged on semester basis to apply software updates. Student’s credentials to access these desktops are managed by ForSecLab staff and are independent from the IIT’s web portal. This gives the ForSecLab a better control on account privileges. There is an HP LaserJet 400 color M451 that can be used for printing in the lab.

**ForSec Lab RADISH**

**Remotely-Accessible Dynamic Infrastructure for Students to Hack (RADISH)** allows class members in ITM cyber security curricula to have full, unrestricted access to ForSec Lab resources from any location and from nearly any Internet connected device. RADISH enables 24/7 access so students may work on their projects continuously with no logistic concern.

RADISH was designed and developed by Illinois Tech faculty and student lab staff as part of the Cyber Forensics and Security Laboratory (ForSec Lab). Students had a hands-on experience building a sophisticated computer infrastructure they would later use in the classroom. The RADISH infrastructure was developed and continually improved upon; and over time, RADISH became the infrastructure of the ForSec Lab due to its uniqueness, reliability, and accessibility.

RADISH’s tested reliability and virtual capability improves students’ research, and lab work since new ideas can be tested from remote computer devices at any time. Currently RADISH supports three courses per semester as well as multiple student projects. By creating a laboratory with the latest in advanced technology and software, students are able to become more involved in their classwork.

RADISH was developed in 2010 as a replacement for portable hard disk drives (HDDs) that were prepared with several pre-configured virtual machines (VMs) and distributed to students to complete in-class laboratories and home exercises. By attaching these HDDs to computers, students were able to determine information based on the structure of the HDDs. The physical existence aspect of the class was completely eliminated by this new system. Classes became 100% virtualized, and all the physical machines had their virtual correspondent with remote access. The system was originally designed to be an addition to the class’s computer infrastructure; however, over the years, RADISH has become the Cyber Forensics and Security Laboratory’s main system, and the class laboratory acts as an addition to RADISH.

This new infrastructure was originally used for the Vulnerability Analysis and Control class. The system transformed tremendously with many improvements made over the past few years, which has allowed for the growth of the system and its utilization in other cyber forensics, cyber security, and steganography courses taught at Illinois Tech. This new system has eliminated many significant limitations. Students are now able to face real-life situations in the classroom by discovering, analyzing, and gaining control over computer network infrastructure they likely have never seen before. This transformation has not only improved the control and unreliability aspect of the class but has also created a platform to build new analytical skills.

This facility allows the university to meet students’ educational expectation though unlimited access to class laboratories. The ForSec Laboratory offers an exceptional online school experience focused not only on a self-study/test basis but also on students’ involvement and in class performance. Students who take courses online are able to experience a school desktop laboratory infrastructure from any location sharing the same resources as in-class students.
Real Time Commutations Laboratory (RTC Lab)
The RTC lab located at the Rice Campus is architected to be highly configurable and to support multiple projects simultaneously. There are over 30 test positions distributed across the lab tables. Students connect PCs or other specialized equipment to the test positions. The test positions are cabled to patch panels at the back of the room from which connections can be made to common equipment including hubs, switches and routers. Patch panels also provide access to the Internet via the IIT campus backbone network and to analog access links to the PSTN.

This layout enables the student to create various network configurations and to study their effects on quality of service, security, routing and other aspects of VoIP service. It enables the creation of VPNs for our industry lab partners to use when they need remote access to proprietary code and records. This layout also makes the lab an environment that can be shared by many students and projects simultaneously.

An extension of this laboratory with student test positions connected to both local resources and the main RTC Lab is installed in the ninth floor of the IIT Tower on the Main Campus.

Real Time Commutations Lab Resources
Lab resources include a variety of hubs, switches and routers as well as various pieces of specialized services and equipment including a call load generator, lines to a SIP Trunk service, lines to the hosted Vonage service, and various vendors’ IP PBXes and VoIP Phones and servers. In the course of student projects we have installed and made use of many different free ware tools and functional elements.

Office of Technology Services Computer Labs
OTS operates 12 computer labs on the Main Campus, all usually available from 8am until 10pm. The Information Technology Management student community usually use the labs in the following buildings:

- The Stuart Building has four computer labs, with a total of 115 workstations that are replaced every three years.
- Siegel Hall has two computer labs with a total of 52 workstations that are replaced every three years.
- Alumni Memorial Hall has one computer lab with 29 workstations that are replaced every three years.

In addition to these labs, OTS in partnership with the Galvin Library provides 53 laptops that are available for student use in the Library 24 hours a day, 5 days per week, plus Saturday & Sunday days. These laptops are replaced every three years.

Finally, 24-hour public access workstations are provided for student use in the McCormick Tribune Campus Center, Hermann Hall Union Building, McCormick Student Village, and State Street Village. These workstations are also refreshed every three years.

Between 2011 and 2013, OTS implemented a Virtual Computing Lab (VCL) to allow students and faculty to access many academic software titles remotely. VCL access continues to grow annually.
OTS Software
OTS PC labs offer 81 current software titles that specifically address engineering students' needs, and 49 titles that are geared toward students in the computing disciplines. These titles are reviewed every semester by the IIT Software Committee, and are updated after thorough testing for compatibility with existing lab hardware/software every summer. Many of these titles are also available on the VCL environment where software licensing permits.

Campus Wide Research computing
In addition to the academic & administrative data center, OTS manages a research data center that was launched in 2008. This research data center provides researchers as well as students a computing environment that is …

- Redundant 50KW uninterruptable power supplies
- Three 20-ton CRAC air-conditioning units
- A complete fire suppression system
- 8 distinct high-performance clusters and workstations ranging from multi-core distributed systems to densely populated GPU clusters
- >10Gbps connectivity into the IIT backbone network
- Cisco Nexus Infrastructure to support a unified fabric throughout both research and administrative data centers.
- Cisco UCS fabric interconnect, blade chassis & blades in both research and administrative data centers.

B. Computing Resources
In addition to the campus-wide computing facilities described in the previous section, the School of Applied Technology also has multiple computing facilities available to ITM students and multiple servers to support teaching and learning activities.

Server/Support Infrastructure
Main Campus Server/Support Infrastructure

Tech South 2034 equipment room—accommodates equipment to support the TS-2033 lab.
- 2 Windows Server 2012 servers with WDS
- Supporting routers, switches, and UPSs
- Clonezilla Imaging Server

Perlstein 219 equipment room—accommodates equipment support the Perlstein 218 lab.
- 1 Windows 2012 Server (Intel i7-4770, 8MB Cache, 32GB RAM, 1TB SATA HDD, 1TB SATA HDD storage)
- Supporting switches and UPSs

IIT Tower 9th Floor equipment room—accommodates equipment to support the Main Campus RTC Lab, and other equipment that supporting SAT.
- Cisco 2921/K9 router
- 2 Dell PowerEdge 2950 III Servers, 32G, with VMware ESXi 5.5 for RTC Lab VMs
- ASA 5505 for an ESINet network bridge to the Rice Campus RTC Lab ESINet
- NMS to assist in maintaining the RTC Lab equipment
- Supporting switches and UPSs
SAT support equipment for Main Campus consists of:

- 2 Dell PowerEdge R620 Servers, 256G RAM with Vmware ESXi 5.5
- Fujitsu ETERNUS DX100 S3 SAN, 16TB, for IIT-SAT Main Campus
- ASA 5505 for students to use for accessing VMs remotely over a VPN
- Supporting switches and UPSs

Rice Campus Server/Support Infrastructure

**RC 241 — Data Center & VMware Farm**

Provides server and desktop infrastructure for classes, projects, and research for faculty, staff, and students. Environment is running VMware vSphere 5.5 with storage being provided by a Fujitsu SAN

- hiram.rice.iit.edu - Fujitsu Eternus DX100 S3 SAN, Providing 32 TB of total storage, 16 TB 10K SAS, 16TB 7.2K SATA, 2-1GB iSCSI, 2-16 GB FC
- lombard.rice.iit.edu - Dell PowerEdge R710, (2) Intel Xeon E5530 @ 2.40 GHZ, 288GB DDR3 ECC RAM, (12) GB NIC, (2) 300GB 10K SAS
- lockport.rice.iit.edu - Dell PowerEdge R610, (2) Intel Xeon E5530 @ 2.40 GHZ, 196 GB DDR3 ECC RAM, (12) GB NIC, (4) 1TB 7.2K SATA
- alsip.otsads.iit.edu - ASUS Server, Intel i5-661@ 3.33GHZ, 8GB DDR2 RAM, 500GB 7.2 K HD, (2) GB NIC running Veeam Backup and Replication 7.0
  - Provides an enterprise backup solution for the entire VM farm.
- 4TB Seagate NAS
- 5 Cisco 2960-S GB Switch Core with FC uplinks
- Meru 1550 centrally managed 801.11n wireless network
  - 22 APs throughout building
  - Cisco 2969-S POE Switch
  - Utilizing Single Sign-on authentication and WPA2 Encryption
- Academic Administrative System
  - hinsdale.rice.iit.edu - Virtual Machine running Server 2008 Enterprise, Xeon-E5530 @ 2.40GHZ CPU, 8GB RAM, 1TB HD.
  - Used as a file server for the ITM Department

**RC 254 — RTC Lab Server room**

- Cisco IAD Router for VoIP SIP trunking
- 2 Dell PowerEdge 2950 Servers with VMware ESXi 5.5 for RTC Lab VMs
- 1 ASA5505 for an ESINet network bridge to the Main Campus RTC Lab ESINet
- Clonezilla Imaging Server 32 bit server
- Clonezilla Imaging Server 64 bit server
- Server room supporting routers, switches, hubs, and UPSs

Computer Laboratories

**Main Campus SAT Computer Laboratories**

**Perlstein Hall 218** — the lab accommodates 28 students and measures 25' * 35'. The lab is used for instruction for ITM 301 and ITMO 456. Students also utilize this lab during open lab times when classes or labs are not being taught. This lab is a joint facility with the Department of Chemical Engineering.

- 29 Dell Desktop Computers
Tech South 2030—this classroom accommodates 12 students; its measurements are approximately 33' * 36'. The room is used to instruct ITMS 448 and project classes. Students bring personally-owned laptops to this classroom.

- 29 Monitors
  - (ASUS V2228-P 21.5 inch, 1920 x 1080)
- HP Printer LJ-P2055X

Tech South 2033—this computer classroom is approximately 40' * 41'. The room is used for ITM 301, ITMO 456, ITMT 492, and ITMT 593 classes. There are 25 seats with two computers at each station.

- 4 20-inch iMacs (A1224 EMC 2316, 4GB RAM, 150GB HDD)
- 25 Premio Desktop Computers
  - (3.2 GHz Intel Core i5-4570, 256K L1 Cache, 1M L2 Cache, 6M L3 Cache, 16GB RAM, 500GB SATA HDD external boot swappable, 500GB SATA HDD internal storage)
- 25 Premio Desktop Computers
  - (2.90 GHz Intel Core i5-3470, 128K L1 Cache, 0.5M L2 Cache, 3M L3 Cache, 16GB, RAM, 500G SATA HDD internal)
- 25 Monitors
  - (ASUS V228-P 21.5 inch, 1920 x 1080) switched between the two sets of PCs
- Printer HP LJ100 color MFP M175nw

IIT Tower 9F3-1—this Main Campus extension of the RTC Lab has 10 student workstations. The room is approximately 27' * 15' and is used to instruct ITMO 546, ITMO 547, and ITMO 450. RTC Lab students also work on their semester projects in this space.

- 11 Premio Desktop PC’s
  - (3.2GHz Intel Core i5-650, 64K L1 Cache, 256K L2 Cache, 4M L3 Cache, 8G RAM, 250G SATA HDD external boot swappable)
- 11 Monitors
  - (ASUS v193 19 inch, 1280 x 1024)
- OpenBTS (Open Base Transceiver Station), or cell site
- NTAP (Network Traversal and Performance) test bed consists of a switches, 8 routers, 8 hubs, and 2 (core2 Duo PCs), 1 Web RTC Server, and 1 Asterisk/STUN/TURN server
- Vonage VoIP MTAs
- Supporting switches, hubs, and UPSs

IIT Tower 9E3-2—this lab accommodates RTC Lab student projects. It measures 15' * 24' and supports instruction in ITM 546 and ITMO 547, and also supports the lab’s ESINET NG911 projects with the National Emergency Number Association.

- 10 Premio Desktop PCs (core 2 Duos) with monitors for student RTC Lab projects
- NG911 ESINET Test bed consists of the following support hosts: SIPc (caller), PSAP call taker, SIPd, DNS1, ESRT, Public LOST, Private LOST, BCF (gateway), DNS2, and a PSAP
- 1 OpenBTS with a DC power supply rack mounted
- SIPp test bed consists of a SIPp server, SIPp client, an Asterisk server, and a switch
for monitoring

- Mu Dynamics (Google) mu-8000 Network Performance & Security Testing Appliance
- Clonezilla Imaging Server
- Supporting switches, hubs, and UPSs

**Rice Campus SAT Computer Laboratories**

**RC 255 - RTC Lab**— Supports student learning, projects and research in real-time communications. There are over 30 test positions distributed across the lab tables and racks to accommodate VoIP and other RTC equipment.

- 6 Premio Desktop PCs (core 2 Duos) with monitors for student RTC Lab projects
- VoIP System consisting of a Kamailio SIP Server, mySQL Database Server, two Asterisk Servers
- 2 BGSx4e Norel Business Services Gateways
- 1 BGSX8ew Nortel Business Services Gateways
- 1 Cisco 1700 Series Gateways
- 1 Cisco MCS 7800 Series Server
- 2 Cisco 7940 Series IP Phones
- 1 Legacy PSAP
- 2 Vonage MTAs
- ESINET consisting of
  - Abacus 5000 for testing with SIP or SS7
- Lab supporting routers, switches, hubs, and UPSs

**RC 256**—this lab supports instruction and research in wireless networking, including IEEE 802 standards as well as 3G and 4G digital communications; it is used for instruction for ITMO 542.

- ESINET and lab supporting routers, switches, hubs, and UPSs

**RC 207**—this lab/classroom is a general use computer lab used by a number of ITM courses.

- 21 Dell OptiPlex 980 Desktop Computers
  - Intel i7-870 @ 2.93GHZ CPU, 8GB DDR3 RAM, 512MB GPU, 250GB 7.2K HD, 1GB NIC
  - 17in LCD Monitors

**RC 210**—this lab/classroom is a general use computer lab used by a number of ITM courses. This is an OTS lab equipped and provisioned by OTS and operated and administered by the School of Applied Technology

- 21 Dell OptiPlex 990
  - Intel i7-3770 @ 3.40GHZ CPU, 8GB DDR3 RAM, 1GB GPU, 500GB 7.2K HD, 1GB NIC
  - 22in Widescreen LCD Monitor

**RC 244**—this lab/classroom is used by our ITMO and ITMD courses due to the hardware requirements of these classes.

- 25 Premio Desktop Computers
  - Intel i7-3770 @ 3.40 GHZ CPU, 32GB DDR3 RAM, Onboard GPU, Removable Dual Star-Tech HD Bays (500GB 7.2K HD’s), Dual 1GB Intel NIC
  - 20in LCD Monitor
RC 247—this lab/classroom is used by our ITM301 Intro to Hardware and Software class; the lab is configured to allow the students to practice assembly and disassembly of desktop computers.

- 10 whitebox PCs (custom built from parts)
  - Intel i3 @ 1.5GHZ CPU, 8 GB of DDR3 RAM, Onboard GPU, 250GB 7.2K HD, 1GB NIC
  - 17in SOHO LCD Monitor

RC250—this lab is part of our Cyber Forensics and Security Laboratory and is used for a number of ITMS courses and in support of student labs and projects.

- 25 Premio Desktop Computers
  - Intel Core 2 Quad @ 2.50GHZ CPU, 8GB DDR2 RAM, 250GB 7.2K HD, 1GB NIC
  - 18in LCD Monitors

SAT Research Laboratories

Rice Campus

Eucalyptus 4.0.2 Cloud Computing Stack—Capacity is over 100 IPs instances supporting over 200 virtual machine instances over 4 nodes and up to 1 TB of Object based storage and 750 GB of EBS based storage. Capabilities include load balancing and elastic deployment. Systems are provisioned by Cobbler 2.4.1 instance running on Ubuntu 14.04 server edition. Projects on the Eucalyptus Stack are currently running an elastic Hadoop Cluster with capacity up to 32 nodes.

- Incheon - Dell PowerEdge 2970, 12 cores, 32 GB of memory, 1 TB of 15K SCSI local storage
- Alexandria - Dell PowerEdge R710, 8 cores, 96 GB of memory, 3 TB of local storage
- Quantas - Dell PowerEdge R510, 8 cores, 32 GB of memory, 3 TB of local storage
- Nebelet - Dell PowerEdge R510, 8 cores, 32 GB of memory 3 TB of local storage
- lexington.sat.iit.edu 1 Dell PowerEdge 1850
- 3 HP ProLiant DL360
- oswego.sat.iit.edu -> cobbler server 1 Dell PowerEdge SC 1425

Deployment and Operations Research Cluster—Provides research capabilities into CEPH distributed file system clusters and MAAS (Metal as a Service) clustering for application install.

- 16 Dell Poweredge 1425, 2 Single core Xeon processors, 4 GB of memory, 40 GB hard drive

Test Eucalyptus Private Cloud—two test clouds supporting cloud research.
Test Cloud 1 is used for the practice of installation and upgrade testing for production cloud, using Centos 6

- 1 WhiteBox server, 8 cores, 16 GB memory, 1 TB of local storage
- 3 ASUS RS100-X7, 4 cores each, 8 GB memory, 1 TB local storage

Test Cloud 2 is used for research into passthrough via VFIO in the Linux Kernel for use in on demand GPU cloud computing resources.

- 1 White Box servers, 8 cores, 16 GB memory, 1 TB of local storage
- 3 ASUS RS100-X7, 4 cores each, 8 GB memory, 1 TB local storage
- 1 GPU cluster for GPU research – Containing for AMD Radeon
- 3 White Box storage systems (Free NAS)
C. Guidance
OTS provides various online resources in myIIT for use of the following computing resources:

- Email and Google Apps
- Internet Access
- myIIT
- Computer Labs and Remote Printing
- IIT Online
- Telecommunications

There is also a searchable Support Desk Knowledge Base for problem assistance.

The ITM Faculty and Teaching Assistants provide assistance for any software related to courses.

*ForSec Lab*— during the first class session of all courses taught in the Forensics and Security Lab, students receive orientation in the use of the different computing resources offered. Through the semester Lab TAs provide assistance for any software related to courses.

D. Maintenance and Upgrading of Facilities

Both OTS- and SAT-operated computer labs undergo frequent review and assessment to keep computing resources current and accessible. These computer labs are used for both academic courses and university-organized events. Lab computers are refreshed on a three-year cycle, to ensure that students have access to equipment that supports their academic goals. Lab instructional software is also reviewed every summer by faculty, and is updated after thorough testing for compatibility with existing lab hardware and software.

All OTS workstations and servers are managed and maintained by full-time professional staff in the Office of Technology Services. These staff members work with faculty and students to insure that the systems are reliable and the software is adequate for coursework in the various university computing curricula.

SAT workstations and servers are managed and maintained by full-time professional staff in the School of Applied Technology technical services. They are ably assisted by ITM student staff members who must have completed ITM 301 and have a level of knowledge equal to or greater than a CompTIA A+ certified technician. As ITM student technical staff members advance in their studies, they are entrusted with projects of increasing depth and responsibility, always under vigilant supervision and mentoring of the professional staff. This offers them a significant opportunity for professional development, something rarely available in student employment.

Adequacy of the SAT computing facilities is assessed on a continuous basis, but usually coincides with the request to ITM faculty each semester to provide any changes to the software and hardware for the next semester. In the majority of the ITM classes, the standard upgrade cycle is sufficient. In a few courses each year, specific hardware is upgraded and new software licenses are purchased as faculty introduce new courses. Very few student complaints are registered each semester to the professional staff, and students can voice concerns directly to the SAT Director of Information Technology or the university Chief Technology Officer if the situation is warranted.
ForSec Lab—This lab is continuously updated to keep pace with the increasing cyber security needs of businesses, government institutions, professional and educational organizations, and individuals. The lab software is reviewed every summer by the ForSecLab staff and is updated after testing for compatibility with the existing equipment. All workstations and servers are managed by the ForSecLab staff.

E. Library Services
The IIT Libraries consist of five facilities located on three campuses. Because of the multidisciplinary nature of IIT’s programs in engineering and the computing disciplines, all libraries provide some level of support for these programs. The Paul V. Galvin Library is IIT’s main library and provides primary support for engineering and computer science, both in terms of collections and services. IIT’s other libraries are the IIT Chicago-Kent College of Law Library, the Graham Resource Center serving the College of Architecture, the Center for the Study of Ethics in the Professions Library, and the Institute for Food Safety and Health Library. IIT libraries are actively engaged in the ongoing assessment of their collections and services, through both quantitative and qualitative methods. On the quantitative side, the library collects and regularly reviews data on such things as use of library materials (print and digital), gate counts, instructional sessions, and reference transactions. On the qualitative side, Galvin Library has participated in LibQUAL+, an internationally normed library service and quality assessment instrument developed by Texas A&M University (TAMU) and the Association for Research Libraries (ARL), four times since 2004. We have also been part of IIT’s Students Speak survey. The data generated by all means of assessment is reviewed to inform the libraries’ decisions on a wide array of collection and service-related issues.

Collections
The libraries’ total collections consist of more than 62,000 full-text e-journals, 1,000,000 e-books, and 170 on-line research databases plus a robust legacy collection of more than 1,200,000 physical volumes in all formats. Out of this total collection, approximately 24,000 e-journals, 40,000 e-books, and 80 databases directly support IIT’s current engineering and computer science programs. The library also maintains IIT’s institutional repository, which allows students and faculty to archive and optionally disseminate their work, including theses and dissertations, conference presentations and poster sessions, research papers, journal articles and preprints, and datasets. In addition to the libraries’ local collections, IIT is a founding member of the Consortium of Academic and Research Libraries in Illinois (CARLI), a resource-sharing consortium that allows us to provide access to more than 32 million library items from 86 additional academic libraries statewide.

Overall, the data obtained through the LibQUAL+ and Students Speak surveys indicate that the libraries’ technical collections are adequate to support the engineering and computer science programs. The one area singled out in the students speak surveys as inadequate, materials sciences, was addressed in FY2012–2013 through a $5,000 grant to purchase new books in this area and a realignment of databases, replacing the ASM handbooks with the SpringerMaterials database. Quantitative data shows that online technical collections are increasingly heavily used by IIT researchers, while use of print technical resources is in steady decline. These data helped inform our decision to withdraw many print journal back issues and older books from the collection, enhancing the discoverability of the remaining library materials and providing room to expand collaborative and individual study space. These data have also shown a gradual
decline in the use of traditional non–full-text “abstract and index” (A&I) research databases along with a marked increase in the use of databases with special features, like Science Citation Index, and full-text sources. This, along with discussions with faculty in several departments, led to the library dropping several A&I databases over the past two years in favor of full-text sources.

The emphasis on multidisciplinary studies and research means that more than just the technical collection is required to support the engineering and computing programs, however. Key non-technical areas of interest include business, economics, entrepreneurship, public policy, law, and the behavioral sciences. Qualitative data shows less user satisfaction with the library collections in these areas.

Budgeting is the primary challenge to providing adequate library support for IIT’s engineering and computing programs. Thus far, there has been no significant impact on the quality of support we provide, mainly due to the resource sharing and document delivery options available through CARLI, on which we rely heavily. For several years, we have been unable to add new journal titles without a corresponding cancellation of another title of approximately the same price. We have not yet had to curtail purchasing of requested books, but only because of the low volume of such requests due to engineering faculty's heavier reliance on the journal literature.

The libraries’ collections do not provide systematic access to a broad range of engineering standards to support the professional engineering curriculum. This is offset by the fact that many standards issuing organizations provide access through deeply discounted or free student memberships and/or class-based access programs.

Services
IIT Libraries provide a wide array of services in support of the engineering and computing programs, including information competency instruction and in-depth research help. IIT librarians have been engaging with faculty for at least ten years to provide customized information literacy competency instruction, most often in the freshman level “Introduction to the Profession” classes and in the Interprofessional Projects (IPRO). Librarians have also engaged with faculty to provide instruction in other classes, such as the new engineering themes program. These sessions are focused on meeting the standards for information competency established by the Association of College and Research Libraries and the American Society for Engineering Education. Librarians have also been involved in supporting the IPRO program, providing research help and guidance as well as targeted sessions on literature searching and patent searching.

In addition to classroom instruction, librarians provide individual research help to students and faculty, including in-depth research assistance, citation analysis, and assistance with the institutional repository. To assist with this aspect of library service, the library established a Research Help Office staffed with professional librarians during peak hours and undergraduate research assistants at other times. Research assistance is also available to students and faculty by appointment.

Facilities
Improvements in library facilities support students across all disciplines. These include extended hours and enhanced collaborative and individual study spaces.
One of the most persistent requests from students, expressed in both the Students Speak and LibQUAL+ surveys was the need for extending overnight hours to include both levels of the library. This was done in the fall of 2013 and included hiring two additional support staff to manage the overnight hours.

One of the other consistent requests from students was the addition of both collaborative and individual study space in the library. To meet this need, the library has created more than 100 additional seats. This study space was created through the removal of outdated and little used print materials and print materials that are readily available on-line. This had the added benefit of making the print collections easier for students to use. This project was also supported by the Class of 2012 through the 2012 student gift, which provided funding for furnishings for the expanded study space.

**F. Overall Comments on Facilities**

Every building on campus has a building monitor who can be contacted about any office specific issues and who is also in charge of building safety. Work orders can also be submitted directly to IIT Facilities.

Regular classrooms are maintained by university facilities professional staff at both the Main and Rice Campuses. Online classroom maintenance is the responsibility of IIT Online. Computer lab maintenance is the responsibility of the Office of Technology services for university labs and servers, and the School of Applied Technology technical services for SAT labs and servers supporting the ITM degrees. Support requests can be made via supportdesk@iit.edu for issues with regular, online, or OTS computer classrooms, or to appliedtech@iit.edu for SAT computer classrooms. Computer labs have a student lab manager available whenever the lab is open. OTS and SAT technical services provides many online resources to assist students with software installed in the labs, and with www based administrative systems. There is also a searchable Support Desk Knowledge Base for problem assistance.

The library has many full time librarians and part-time student library aids available to assist students with their research needs.

The ForSec Lab develops and supports an experimental environment for cyber security and digital forensic education, collaboration, evaluation and research. Cyber security and forensics research, testing and analysis benefits both academic and industry organizations in today’s IT climate. Innovative student ideas and many student lab projects have been recognized with awards, presentations to professional societies, coverage in newspapers, mention in trade publications and offers of employment. Illinois Tech’s Cyber Forensics and Security Lab is operated by the Center for Cyber Security and Forensics Education (C²SAFE).
CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

The Dean of the IIT School of Applied Technology, Dr. C. Robert Carlson, also currently serves as Chair of the Department of Information Technology & Management. The associate chair of the department, Prof. Ray Trygstad, also serves ITM Director of Undergraduate Advising and Director of Information Technology for the School of Applied Technology. Dean Carlson is ultimately responsible for faculty hiring, budget allocations, and policy matters.

The ITM Curriculum Committee, chaired by Prof. Trygstad, is comprised of three full-time faculty or staff members and two adjunct faculty members. In addition, all full-time faculty are invited to participate at their discretion. The staff member on the committee is the SAT Director of Academic Affairs, who is also an ITM adjunct faculty member and graduate student adviser. Any changes to the undergraduate curriculum must be first approved by the Curriculum Committee. This Committee has had continuity of membership since it was established in 2013 and usually meets monthly. Major changes to the program also require approval by the IIT Undergraduate Studies Committee, and new degrees require additional approval by university faculty, the Provost, and the Board of Trustees.

The SAT Board of Visitors also plays a role in ensuring the program’s quality, and the Provost’s office conducted an external review of the ITM Department in 2014, with feedback for the undergraduate program generally favorable. The report of this review is included as Appendix ?.

Dr. Carlson has served as the Director and later Chair of the program since its establishment in 2002, and Prof. Trygstad has served as Curriculum Coordinator and later as Associate Chair since then as well. As the ITM Department is currently a teaching rather than a research department, Dr. Carlson is the sole tenured faculty member in the department. The university (Provost’s office) and School of Applied Technology (Dean’s office) has been supportive with funding for faculty and staff necessitated by the steady growth of the program, as well as expansion of office and laboratory space.

B. Program Budget and Financial Support

Except for discretionary funds from donors for special events and scholarships, all department funds are operational funds from the Dean’s office. Most of these funds are committed to salaries and benefits. Faculty may be tenured (reappointed automatically), tenure-track (with 4-year plus 3-year contracts), non-tenure-track full time, or adjunct (part-time). All faculty members except adjunct faculty receive benefits. Non-tenure-track full time faculty are protected by university regulations with notice dependent on length of service at IIT. Most of the rest of the salary budget is for teaching assistant support. Eight-five percent of the TA support is fixed and the other 15% varies with enrollments. So, most of the budget is permanent and recurring. Capital funds are usually available at the beginning of each fiscal year, June 1, for equipment and facility upgrades/repairs. The bulk of capital funds are committed to computer laboratories and server infrastructure.

The ITM Department is provided a budget for teaching assistants every semester. All undergraduate and graduate laboratory or programming courses with more than 25 students are assigned a teaching assistant, with priority for TA assignment going to full-time faculty.
Whenever possible, classes or faculty members with student enrollment in excess of 50 are assigned two teaching assistants. Teaching assistants are primarily graders; they do not teach laboratories, but they are required to provide a minimum of two hours of office hours each week to assist students and respond to grading issues. As our enrollment grows, managing the TA budget will be an important issue.

ITM faculty can submit requests to the department or college for funding for external educational conferences (i.e. SIGITE) or similar events.

The department ensures that individual full-time faculty members have the necessary computing resources to be effective in their roles. Since all incoming undergraduates receive a new iPad mini in their first week of class, the department has just purchased new iPads for all full-time faculty members, to ensure that they are conversant with the technology used by our students.

As noted in Criterion 7 above, extensive computing infrastructure is available to support teaching and learning activities. One concern is that our program is growing very rapidly with the bulk of our growth occurring at our Main Campus in Chicago, and we are beginning to be handicapped by the fact that the bulk of our computing facilities are at our Rice Campus and we do not have sufficient dedicated, consolidated space at the Main Campus to provide the lab and server infrastructure to support this growth.

C. Staffing

The ITM department has two full-time administrative staff supported by part-time student staff, and by School of Applied Technology staff members who devote a portion of their time to the department as necessary. Currently this is sufficient to manage the day-to-day operational tasks of the department, and also to assist with department events or faculty conferences. As administrative systems change at IIT, there is training for staff provided by the department responsible for the administrative system.

IIT Online staff provides instructional support to all academic units and are each to reach for both education consulting, or educational technology consulting.

The School of Applied Technology Technical Staff under the SAT Director of Information Technology are two full-time employees who manage and administer the computing infrastructure described in Criterion 7. They are assisted by a staff of student employees. Additionally the Forensics and Security Lab and the Real-time Communications Lab described in Criterion 7 each have a part time system administrator, and their own student employee staffs.

D. Faculty Hiring and Retention

The process for faculty hiring is 1) secure approval for a position from the Dean’s office, 2) advertise the position for applications (including diversity considerations), 3) conduct phone interviews and follow-on on-site interviews (usually 3-4 per position), 4) get approval from the Dean’s office and Provost’s office (who ensure that a diverse pool of candidates was considered in the search), and the final appointment made by the Dean’s office. The department currently employs no tenure-track faculty and has no tenure track faculty positions. To date all full time faculty members—except the chair—have been hired from current adjunct faculty members, many of whom were already employed at IIT in university or college IT or academic support positions.
New hire faculty are probationary for their first year and adjunct faculty who do not comply with departmental academic policies are not invited to return to teach for us. Adjunct faculty are drawn from full-time IT professionals, consultants, recent retirees, community college faculty, and full-time university staff members. Apart from probationary faculty not invited to return, our losses of adjunct faculty generally occur due to increased job responsibilities in their primary employment which do not leave them with enough free time to teach with us.

Several of our faculty members have taught in the program since the program began in 2002. Faculty retention is very high, driven by competitive salaries, a great working environment, good facilities and support, and collegial relationships. We treat adjunct faculty members as equal members of our faculty and always treat our students with respect and consideration.

**E. Support of Faculty Professional Development**

There are many on campus teaching and advising seminars that are funded by the college or provost’s office and are available to all faculty.

The University has a sabbatical policy in line with most universities (one semester at full pay or one year at half pay after 6 years) and gives leaves of absence without pay as appropriate for faculty development.

**PROGRAM CRITERIA**

See Criterion 5: Curriculum, A. Program Curriculum, section 5.
Appendix A – Course Syllabi

On pages following.
Syllabus

ITM 100 Introduction to Information Technology as a Profession
2 credit hours / 30 contact hours

Instructor: Ray Trygstad and ITM Department Faculty

Textbook: Material for the course is provided as online reading and handouts, along with other supplemental material on the course web site at http://blackboard.iit.edu.

Course Description: This course introduces students to the steps necessary to analyze a problem in information technology and identify and define the computing requirements appropriate to its solution, with a focus on how to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. Students learn to analyze the local and global impact of computing on individuals, organizations, and society. This course leads students to recognize the need for continuing professional development and imparts an understanding of professional, ethical, legal, security and social issues, and responsibilities in information technology. Students write and present, building their ability to communicate effectively with a range of audiences, and work in teams learning to function effectively together to accomplish a common goal.

Prerequisites: None
This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to discuss what is interesting and compelling about each area of specialization in the field of information technology. The goal of the course is not to teach students specific skills but to convey WHY each topic studied is critical to business, why it is a key piece in the information technology profession, why it is interesting, and why it is FUN. It will be as broad an overview as possible with a strong, key focus on the mission of information technology: providing technology solutions for business problems. Each two-session topic, presented by faculty from across the department, will attempt to fulfill the course description in a microcosm.

Course Objectives: At the conclusion of this course, each successful student will able to:

• Explain the role of information technology as the facilitating function in a modern business enterprise
• Describe considerations for deployment of technology in a business setting
• Recall fundamental concepts and principles of project management and apply them in planning an information technology project
• Describe the role of desktop and personal computers, servers, and their operating systems in the enterprise, and select optimal systems and configurations to meet business needs
• Explain the role of digital data, voice, and video communications in the enterprise, and how voice and data networks are deployed and configured to connect enterprise systems
• Describe basic concepts of software development and its role in connecting enterprise systems
• Explain the key role of data in a business and describe how that data is managed and conveyed to users as information
• Describe how use of the World Wide Web extends and supports the enterprise
• Discuss how systems, networks, and data are protected and secured
• For each topic covered, describe the need for continuing professional development and discuss professional, ethical, legal, security, and social issues and responsibilities
• Working as a team, create and present a comprehensive information system design proposal for an existing business enterprise

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
(l) An ability to effectively integrate IT-based solutions into the user environment.
(n) An ability to assist in the creation of an effective project plan.

**Topics to be covered:**

Topic 01 Introduction to Information Technology – Ray Trygstad
Topic 02 Project Management I – Dennis Hood
Topic 03 Project Management II – Dennis Hood
Topic 04 Desktops, Servers and Operating Systems I – Jeremy Hajek
Topic 05 Desktops, Servers and Operating Systems II – Jeremy Hajek
Topic 06 Data Networks & Communication I – Carol Davids
Topic 07 Data Networks & Communication II – Carol Davids
Topic 08 Software Development I – James Papademas
Topic 09 Software Development II – James Papademas
Topic 10 Managing Data I – Luke Papademas
Topic 11 Managing Data II – Luke Papademas
Topic 12 Web Development I – Brian Bailey
Topic 13 Web Development II – Brian Bailey
Topic 14 Information Security I – William Lidinsky
Topic 15 Preliminary Project Presentations
Topic 16 Information Security II – Bonnie A. Goins
Topic 17 Putting it All Together: Project Presentations – Faculty
Syllabus

ITM 300 Communication in the Workplace
3 credit hours / 45 contact hours

Instructor: TBD

ISBN: 978-0321916785

Other supplemental material may be found on the course web site at http://blackboard.iit.edu.

Course Description: Review, analyze and practice verbal and written communication formats found in the workplace. Emphasis on developing skills in technical writing and oral presentations using electronic and traditional media. Credit not granted for both ITM 300 and COM 421. INTM 301 may be substituted for this course. Prerequisites: None

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to:

- Develop skills in writing quality technical proposal.
- Develop skills in conducting technical presentations
- Understand the communications styles, ethics, and résumé writing
- Develop skills in effective written memos and letters
- Understand problem solving skills in effective group communications

Course Objectives: At the conclusion of this course, each successful student will able to:

- Demonstrate proficiency in verbal communications by giving a technical presentation on a proposal
- Demonstrate proficiency in written communications by completing a comprehensive technical proposal
- Apply the principles of written communication by writing letters, résumés, and reports

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(f) An ability to communicate effectively with a range of audiences
(h) Recognition of the need for and an ability to engage in continuing professional development

Topics to be covered:

- Topic 01 Introduction. Principles of Communications
- Topic 02 Communication Styles and Strategies
- Topic 03 Readability and Style
- Topic 04 Editing, Design, and Formats
- Topic 05 Technical Reports and Research Proposals
- Topic 06 Test #1
- Topic 07 Writing Letters and Résumés, Interviewing
- Topic 08 Group Communications and Efficiency
- Topic 09 Data Bases and library searches–guest speaker, details given in class
Topic 10  Conducting Technical Presentations
Topic 11  Interpersonal, Verbal, Nonverbal Communications, and Emotional Intelligence
Topic 12  Test #2
Topic 13  Proposal Presentations
Syllabus

ITM 301—Introduction to Contemporary Operating Systems and Hardware I
3 Credit Hours / 45 contact hours

Instructor: Louis F. McHugh IV


Course Description: Students study the basics of computer architecture and learn to use a contemporary operating system. Hardware requirements, microcomputer components, software compatibility and system installation and options are covered, along with post-installation topics, storage, security and system diagnosis and repair. Prerequisites: None
This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: The course is a foundation course in the basics of PC functioning from a hardware level to the upper level operating system. It is intent is to serve as a basis for practical studies in other topics in IT.

Upon completion, a student should be able to understand how a PC functions be able to troubleshoot and repair a PC, and understand its workings in a networked environment from a hardware level to OS level. As well, as be comfortable understanding concepts of Linux, virtualization, servers, and tools for managing IT.

Course Objectives:

● History of modern computing and the Internet
● Electricity and power supplies
● How computers actually work, starting from the i4004 microprocessor
● Numbering systems (Base2, Base10, Binary, Hex)
● Processors from the i4004 to the Intel i7
● Experience with motherboards, buses, architecture, memory, etc.
● Experience with storage, monitors, and other peripherals
● Operating systems and architecture (Windows, Linux, and Mac)
● Troubleshooting hardware and software
● Batch commands, & Scripting language
● Networking, physical media, devices, protocols, standards
● Information Security Topics
● OS Utilities, Cloud computing
● Laws, regulations, and compliance frameworks that affect IT professionals
● Current events in computing, especially related to security

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

**Topics Covered:**

Topic 01  First Look at Computers and Tools
Topic 02  Working Inside the Computer
Topic 03  All About Motherboards
Topic 04  Supporting Processors and Upgrading Memory
Topic 05  Supporting Hard Drives
Topic 06  Supporting I/O & Storage Devices
Topic 07  Troubleshooting Hardware Problems
Topic 08  Satisfying Customers’ Needs
Topic 09  Intro to Windows OS
Topic 10  Installing Windows
Topic 11  Maintaining, Windows
Topic 12  Optimizing Windows
Topic 13  Troubleshooting Windows and Applications
Topic 14  Troubleshooting Windows Startup Problems
Topic 15  Connecting to and Setting up a Network
Topic 16  Networking Types, Devices, and Cabling
Topic 17  Security Strategies
Topic 18  Supporting Notebooks
Topic 19  Mobile Devices and Client-side Virtualization
**Syllabus**

**ITM 301—Introduction to Contemporary Operating Systems and Hardware I**  
3 Credit Hours / 45 contact hours

**Instructor:** William Slater


**Course Description:** Students study the basics of computer architecture and learn to use a contemporary operating system. Hardware requirements, microcomputer components, software compatibility and system installation and options are covered, along with post-installation topics, storage, security and system diagnosis and repair. *Prerequisites:* None  
This is a required course in the Bachelor of Information Technology and Management degree.

**Course Outcome:** The course is a foundation course in the basics of PC functioning from a hardware level to the upper level operating system. It is intent is to serve as a basis for practical studies in other topics in IT.

Upon completion, a student should be able to understand how a PC functions be able to troubleshoot and repair a PC, and understand its workings in a networked environment from a hardware level to OS level. As well, as be comfortable understanding concepts of Linux, virtualization, servers, and tools for managing IT.

**Course Objectives:** At the completion of this course, students should have acquired a basic understanding of and experience with

- History of modern computing and the Internet
- Electricity and power supplies
- How computers actually work, starting from the i4004 microprocessor
- Numbering systems
- Processors from the i4004 to the Intel i7
- Motherboards, buses, architecture, memory, etc.
- Storage, monitors, and other peripherals
- Operating systems and architecture (Windows, Linux, and Mac)
- Troubleshooting hardware and software
- Batch command language
- Networking, physical media, devices, protocols, standards
- Security
- OS Utilities
- Cloud computing
- Laws, regulations, and compliance frameworks that affect IT professionals
- Current events in computing, especially related to security
- Certifications and have the opportunity to acquire some important free certifications (for extra credit)
The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

Topics Covered:

Topic 01 Introduction, Number Systems, History of Computers, Electricity
Topic 02 Processor Types and Specifications – CPU
Topic 03 Motherboards, BIOS, Buses, Power Supplies
Topic 04 BIOS and Memory
Topic 05 Storage Drive Technologies
Topic 06 Compliance Management, Risk Management and Data Center Safety & Security
Topic 07 File Systems and Partitions and more discussion on Batch Files
Topic 08 Compliance Management, Risk Management and Data Center Safety & Security
Topic 09 Video Hardware, Printers & Laptops, Netbooks, Smartbooks, Review
Topic 10 Networking configuration and tools
Topic 11 Vista vs. XP, Windows 7, Windows 8, Windows 10 Preview
Topic 12 Windows Lab Installation day; Windows Extras – Bootloaders and tools
Topic 13 Survey of Virtualization, Linux, and computer design
Topic 14 Class Practicum Project – Hands-on Hardware identification
Syllabus

ITM 311 Introduction to Software Development
3 credit hours / 45 contact hours

Instructor: James Papademas

ISBN: 978-1285081953

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: A broad introduction to object-oriented programming and the related knowledge necessary to program in a contemporary programming language. This would include coverage of an Application Development Kit, a standard integrated Development environment, and the use of GUI components. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

• Gain experience and skills to write, compile, execute, troubleshoot, and resolve problems using Java Programming Language utilizing Java Application or Java Applet
• Acquire the ability to develop, understand and implement the concept of Object Oriented Programming and Methodology in program development
• Acquire the ability to develop and identify important Java standard libraries and classes
• Gain the ability to locate and use of Help Resources
• Enhance confidence in developing and writing Object Oriented Java Programs
• Experience software application and development theory and concepts

Course Objectives: At the conclusion of this course, each successful student will able to:

• Develop the ability to write and resolve programming problems using Java Language
• Build Java Applications and Java Applets
• Identify Java standard libraries and classes
• Write, compile, execute and troubleshoot Java programming
• Understand and utilize Java Graphical User Interface in the program writing
• Understand Java programming syntax, control structures and Java programming concepts
• Understand, locate and Use Help Resources
• Build the confidence in “speaking” and writing programs in Java

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01  Introduction to Java and the IDE
- Topic 02  Java Methods and code blocks
- Topic 03  OOP concepts and design techniques in JAVA
- Topic 04  Decision making
- Topic 05  loops
- Topic 06  Characters and the String Class
- Topic 07  Arrays
- Topic 08  Intro to Inheritance
- Topic 09  Advanced Inheritance. Packages. Mid Term.
- Topic 10  Exception Handling
- Topic 11  File Processing
- Topic 12  Intro to GUI components
- Topic 13  Advanced GUI topics
- Topic 14  Graphics.
- Topic 15  Applets, Images & sound. Final Exam Review
- Topic 16  Final Examination
Syllabus

**ITM311 Introduction to Software Development**
3 credit hours / 45 contact hours

**Instructor:** Sheikh Shamsuddin (Sam)

**Textbook:** Liang, Daniel *Introduction to Java Programming, Comprehensive Version (9th Edition)*, 2014

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

**Course Description**
A broad introduction to object-oriented programming and the related knowledge necessary to program in a contemporary programming language. This would include coverage of an Application Development Kit, a standard integrated Development environment, and the use of GUI components. **Prerequisites:** None

This is a required course in the Bachelor of Information Technology and Management degree.

**Course Outcomes**
This course introduces the concepts of object-oriented design and implementation approach in Java programming language. Participants will use different tools to understand some basic design patterns and know how to apply them into real world situations. Object-Oriented based design knowledge and how to implement in Java language will be discussed. Some basic HTML World Wide Web programming will also be included. Upon completion of this course the student should be able to do the following:

- Gain experience and skills to write, compile, execute, troubleshoot, and resolve problems using Java Programming Language utilizing Java Application or Java Applet
- Acquire the ability to develop, understand and implement the concept of Object Oriented Programming and Methodology in program development
- Acquire the ability to develop and identify important Java standard libraries and classes
- Gain the ability to locate and use of Help Resources
- Enhance confidence in developing and writing Object Oriented Java Programs
- Experience software application and development theory and concepts

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Develop the ability to write and resolve programming problems using Java Language
- Build Java Application and Java Applet
- Identify Java standard libraries and classes
- Write, compile, execute and troubleshoot Java programming
- Understand and utilize Java Graphical User Interface in the program writing
- Understand Java programming syntax, control structures and Java programming concepts
- Understand, locate and Use Help Resources
- Build the confidence in “speaking” and writing programs in Java
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01 Introduction to programming logic. Pseudo code an
Topic 02 Java data types, variable names, primitive data t
Topic 03 Expression, selection control, Java Swing, Java F
Topic 04 Programming loops
Topic 05 Methods
Topic 06 Arrays
Topic 07 Characters, strings, and string class
Topic 08 File I/O manipulation
Topic 09 Objects and Classes
Topic 10 Object Oriented Programming
Topic 11 Inheritance, Polymorphism, and Abstract Classes
Topic 12 Programming Labs, Assignments, Quizzes, and Exams
Syllabus

ITM 312 Introduction to Systems Software Programming (C++ Programming)
3 credit hours / 45 contact hours

Instructor: James Papademas


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Introduces basic concepts of systems programming. Students learn to apply basic programming concepts toward solving problems, create source files and implement header files, work with and effectively use basic data types, abstract data types, control structures, code modularization and arrays. Students will be introduced to object paradigm including, classes, inheritance, and polymorphism applications. Prerequisites: None
This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

- Write, compile, execute, troubleshoot, and resolve problems using the C++ Programming Language and its features
- Develop, understand and implement the concept of Object Oriented Programming methodology in programming development
- Develop and identify important C++ standard libraries and classes
- Locate and use Help Resources
- Develop and write Object Oriented Programs
- Analyze and evaluate software application and development theory and concepts

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write computer programs using the C++ language
- Recall key elements of the C++ language, its structure, syntax concepts, libraries and application
- Compile, execute and debug programs
- Explain input/output, functions, data types and control structures
- Construct arrays, data structures and use pointers as references
- Implement C++ classes and objects, constructors and destructors
- Apply Object Oriented Programming (OOP) concepts
- Test, design and solve problems using the C++ language

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, *programming*, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01  Introduction to C++ and the IDE
- Topic 02  Data types, variables, naming conventions & declarations
- Topic 03  Expressions, decision making, control structures
- Topic 04  Loops
- Topic 05  Functions. Header and Implementation files.
- Topic 06  Arrays and Vectors.
- Topic 07  Searching and Sorting Array techniques
- Topic 08  Pointers, characters and strings
- Topic 09  String class. Intro to Data Structures. Mid Term.
- Topic 10  File processing
- Topic 11  Exception handling
- Topic 12  Inheritance
- Topic 13  Polymorphism
- Topic 14  Virtual Functions, function overloading vs. Function overriding
- Topic 15  Final Exam Review
- Topic 16  Final Examination
Syllabus

ITM 312 Intro to Systems Programming
3 credit hours / 45 contact hours

Instructor: Sheikh Shamsuddin (sam)


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description
This course introduces basic concepts of systems programming. Students learn to apply basic programming concepts toward solving problems, create source files and implement header files, work with and effectively use basic data types, compile source code into binary executable files, and understand the use of project management.

Course Outcome: Upon completion of this course the student should be able to do the following:

• Write, compile, execute, troubleshoot, and resolve problems using the C++ Programming Language and its features
• Develop, understand and implement the concept of Object Oriented Programming methodology in programming development
• Develop and identify important C++ standard libraries and classes
• Locate and use Help Resources
• Develop and write Object Oriented Programs
• Develop the ability to analyze and evaluate software application and development theory and concepts

Course Objectives: At the conclusion of this course, each successful student will able to:

• Write computer programs using the C++ language
• Recall key elements of the C++ language, its structure, syntax concepts, libraries and application
• Compile, execute and debug programs
• Explain input/output, functions, data types and control structures
• Construct arrays, data structures and use pointers as references
• Implement C++ classes and objects, constructors and destructors
• Apply Object Oriented Programming (OOP) concepts
• Test, design and solve problems using the C++ language

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, *programming*, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application

**Topics to be covered:**

- **Topic 01** Introduction to programming logic. Pseudo code and flowcharts
- **Topic 02** C++ data types, variable names and input/output
- **Topic 03** Expression and selection control
- **Topic 04** Programming loops
- **Topic 05** Functions and Arrays
- **Topic 06** Searching, Sorting, and C++ STL
- **Topic 07** C++ pointers
- **Topic 08** Characters, strings, and string class
- **Topic 09** File I/O manipulation
- **Topic 10** C++ Structure
- **Topic 11** Object Oriented Programming
- **Topic 12** Inheritance and Polymorphism
- **Topic 13** Programming Labs, Assignments, Quizzes, and Exams
Syllabus

ITMD 312 Introduction to Systems Software Programming (C++ Programming)
3 credit hours / 45 contact hours

Instructor: Dr. Kenneth Straus


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Introduces basic concepts of systems programming. Students learn to apply basic programming concepts toward solving problems, create source files and implement header files, work with and effectively use basic data types, abstract data types, control structures, code modularization and arrays. Students will be introduced to object paradigm including, classes, inheritance, and polymorphism applications. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: This course introduces basic concepts of systems programming. Students learn to write computer programs in C++ that solve problems; solving problems with programs is the focus. As part of learning to program, students learn to create source files and implement header files, work with and effectively use basic data types, compile source code into binary executable files, and understand the use of project management.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Design an algorithm to solve a problem.
- Translate that algorithm into a C++ program.
- Debug, test, and verify that the program solves the original problem.
- Apply Object-Oriented-Programming methods in developing a program.
- Use C++ standard libraries and classes.
- Analyze programs for efficiency; change techniques and data structures to improve efficiency.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.
Topics to be covered:
Topic 01 Variables
Topic 02 Data Types
Topic 03 Basic I/O
Topic 04 Branching
Topic 05 Strings
Topic 06 Arithmetic Operators
Topic 07 Loops
Topic 08 Vectors/Arrays
Topic 09 Functions
Topic 10 References
Topic 11 Searching
Topic 12 Sorting
Topic 13 Pattern Matching
Topic 14 Iterators
Topic 15 Structs
Topic 16 File I/O
Topic 17 Classes
Topic 18 Object-Oriented Techniques
**Syllabus**

**ITM 497 Independent Study**
Variable 1 to 6 credit hours

**Instructor:** As assigned. Full-time faculty may schedule students for ITM 497 as the faculty member’s schedule allows. Adjunct faculty are under no obligation to conduct independent study with students as they receive no additional compensation for this, so their participation is entirely voluntary. Course coordinator is Ray Trygstad.

**Textbook:** Selected by the instructor and student as appropriate for topics covered in the course.

**Course Description:** Special Projects.

**Prerequisites:** Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** Each successful student in this independent study course will demonstrate knowledge as defined by the selected topics for the term.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topics covered in the course

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

**Topics to be covered:** Topics for the course will be defined by the instructor and student. Registration is by permit only; students must prepare and submit a written research prospectus, proposal, or abstract of material to be studied to the faculty member before they issue a permit to register. The faculty member will work with the student as necessary to refine the prospectus, proposal, or abstract to their mutual satisfaction. The prospectus, proposal, or abstract will define the topics to be covered in the course.
Syllabus

ITMD 361 Fundamentals of Web Development
3 credit hours / 45 contact hours

Course Coordinator: Brian Bailey


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course will cover the creation of Web pages and sites using HTML, CSS, Javascript, jQuery and graphical applications, as well as the client and server architecture of the Internet and related web technologies. The creation and deployment of modern, standards-compliant web pages are addressed. Students create and deploy a Web site with multiple pages and cross-linked structures. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to:

- Recognize HTML, CSS and JavaScript mark-up and code in a web page/application.
- Select the proper mark-up tags or code to achieve a particular result.
- Identify improperly used mark-up and code.
- Produce modern standards compliant web pages.
- Deploy web pages to a public server.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Explain the client and server architecture of the Internet and related web technologies.
- Use a basic text editor and other software tools to create web pages using HTML, CSS, JavaScript, jQuery, and images.
- Deploy web pages to a Linux-based web server using sftp

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(f) An ability to communicate effectively with a range of audiences

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.
Topics to be covered:

Topic 01 Introduction / Focus on Underlying Technologies / HTTP Request / Response
Topic 02 Technology Continued & Introduction to HTML, CSS, JS
Topic 03 HTML Markup Introductions and Basics
Topic 04 HTML Markup Text & Images
Topic 05 HTML Markup Images & Tables`
Topic 06 HTML Markup Forms
Topic 07 CSS Introductions and Basics
Topic 08 CSS Rules & Properties
Topic 09 CSS Box Model
Topic 10 CSS Float, Position, Page Layout
Topic 11 JavaScript Introduction and Language Basics
Topic 12 JavaScript – Google Maps API
Topic 13 jQuery Introductions
Topic 14 JavaScript and jQuery Examples
Syllabus

ITMD 362 Human-Computer Interaction and Web Design
3 credit hours / 45 contact hours

Instructor: TBD


Course Description: Students in this course will learn the importance of human computer interaction design and the effectiveness of user-centered design. The course will cover a survey of methods frequently used by the HCI profession, such as usability testing and prototyping, as well as general design principles and how to use design guidelines. A particular emphasis will be placed on usability for Web site engineering, and students will apply knowledge from the field in the design and construction of user-centered Web sites. Prerequisites: ITMD 361

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to:

- Describe the diversity of information system users and tasks, and their impact on design.
- Describe the core concepts, applicability, and cost benefits of user-centered design.
- Demonstrate how user-centered concerns can be incorporated into system development life cycles.
- Explain the need to evaluate system usability.
- Describe and apply general principles of design.

Course Objectives: At the conclusion of this course, each successful student will able to:

- D Recall, describe and apply principles of user-centered design.
- Conduct task analysis & apply the information to user-centered design.
- Evaluate user interface designs with human subjects.
- Recall, explain, and apply the design principles of alignment, contrast, proximity, and repetition.
- Design and build a user-centered Web site applying HCI methods and good principles of design.
- Apply color and typography in Web design to optimize the interface.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

Topics to be covered:
Topic 01 Introduction to Human Computer Interaction
Topic 02 Interface quality and evaluation
Topic 03 Interactive system and interface design examples
Topic 04 Dimensions of interface variability
Topic 05 User-centered design and task analysis
Topic 06 User interface implementation
Topic 07 User interface implementation: prototyping
Topic 08 Evaluation
Topic 09 UX Methods for Agile Development
Topic 10 No Class: Spring Break
Topic 11 UX & Web Design Guidelines
Topic 12 Designing the Web interface & navigation
Topic 13 Color & Graphics for the Web
Topic 14 Web Typography and Advanced Design
Topic 15 Making UX Work In The Real World
Topic 16 Project Presentations and Exam Review
Topic 17 Final Examination as per the IIT Final Exam schedule
Syllabus

ITMD 411 Intermediate Software Development
3 credit hours / 45 contact hours

Instructor: James Papademas


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course covers a broad spectrum of object-oriented programming concepts and application programming interfaces. The student considers the details of object-orientated development in topics of multi-threading, data structure collections, stream I/O and client interfaces. Software engineering topics of packaging and deployment are covered as well. Hands-on exercises reinforce concepts taught throughout the course. Prerequisites: ITM 311

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: This course covers object-oriented programming concepts in the Java Standard Edition platform. Employing the latest software development kit, the student considers software development topics in data structures, stream I/O, serialization, concurrency and graphical clients. Software engineering topics including packaging, deployment, debugging and unit testing. Hands on exercises reinforce concepts gained throughout the course. A final project integrates course topics into a contemporary Graphical User Interface client application. Upon completion of this course the student should be able to do the following:

- Understand basic Object Oriented programming concepts.
- Apply Test Driven Development methodologies.
- Understand packaging and deployment Java SE applications.
- Describe Software development terminology.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write Object Oriented Java SE code.
- Create a Java based Graphical User Interface.
- Locate application functionality from a large programmer API.
- Author well-constructed code and software documentation.
- Utilize an IDE to develop, test and debug Java SE code.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- **Topic 01** Java Syntax review, Algorithm Development, Java Eclipse Compiler.
- **Topic 02** Data Types, Operators, Strings, Expressions,
- **Topic 03** Statements and Blocks. Control Flow Statements
- **Topic 04** Object-Oriented Programming Concepts.
- **Topic 05** Interfaces and Inheritance and packages
- **Topic 06** Collections, Generics
- **Topic 07** Try/Catch, Exceptions. Junit Testing
- **Topic 08** JDBC Database Access. DAO Design PatternS & DRY. Refactoring.
- **Topic 09** Threads, Concurrency, Single Responsibility principle, IO Serialization. Mid Term.
- **Topic 10** Networking TCP/IP, UDP, socket programming
- **Topic 11** Coupling and Cohesion
- **Topic 12** Using polymorphism. Regular expression.
- **Topic 13** Android SDK introduced.
- **Topic 14** Final Project.
- **Topic 15** Final Exam Review
- **Topic 16** Final Examination
Syllabus

ITMD 411 Intermediate software development
3 credit hours / 45 contact hours

Instructor: Luke Papademas


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course covers a broad spectrum of object-oriented programming concepts and application programming interfaces. The student considers the details of object-orientated development in topics of multi-threading, data structure collections, stream I/O and client interfaces. Software engineering topics of packaging and deployment are covered as well. Hands-on exercises reinforce concepts taught throughout the course. Prerequisites: ITM 311

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: This course covers object oriented programming concepts in the Java Standard Edition platform. Employing the latest software development kit, the student considers software development topics in data structures, stream I/O, serialization, concurrency and graphical clients. Software engineering topics including packaging, deployment, debugging and unit testing. Hands on exercises reinforce concepts gained throughout the course. A final project integrates course topics into a contemporary Graphical User Interface client application. Upon completion of this course the student should be able to do the following:

- Understand basic Object Oriented programming concepts.
- Apply Test Driven Development methodologies.
- Understand packaging and deployment Java SE applications.
- Describe Software development terminology.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write Object Oriented Java SE code.
- Create a Java based Graphical User Interface.
- Locate application functionality from a large programmer API.
- Author well-constructed code and software documentation.
- Utilize an IDE to develop, test and debug Java SE code.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(h) Recognition of the need for and an ability to engage in continuing professional development
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01  Java Syntax review, Algorithm Development, Java Eclipse Compiler.

Topic 02  Data Types, Operators, Strings, Expressions,

Topic 03  Statements and Blocks. Control Flow Statements

Topic 04  Object-Oriented Programming Concepts.

Topic 05  Interfaces and Inheritance and packages

Topic 06  Collections, Generics

Topic 07  Try/Catch, Exceptions. Junit Testing

Topic 08  JDBC Database Access. DAO Design PatternS & DRY. Refactoring.

Topic 09  Threads, Concurrency, Single Responsibility principle, IO Serialization. Mid Term.

Topic 10  Networking TCP/IP, UDP, socket programming

Topic 11  Coupling and Cohesion


Topic 13  Android SDK introduced.

Topic 14  Final Project.

Topic 15  Final Exam Review

Topic 16  Final Examination
Syllabus

**ITMD 412 – Advanced Structured and Systems Programming**
3 credit hours

**Instructor**: Sheikh Shamsuddin (sam)


Supplemental material on Data Structure and Algorithms are provided on the course web site at http://blackboard.iit.edu

**Course Description:**
Structured programming continues with advanced concepts including strings, arrays, pointers, data structures, file manipulation, and dynamic memory management. Students create more complex applications that work with user input, manipulate user supplied text or text obtained from a file, apply standard library routines for working with literal text, use pointers to store complex structures within arrays, and read and write data from files, the console, and the terminal. The object-oriented programming (OOP) paradigm is covered in depth including the philosophy of OOP, classes and objects, inheritance, template classes, and making use of class libraries. Current technologies included in this course include the C++ programming language.

**Prerequisite**: ITM 312.

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcomes**
Upon completion of this course, the student should be able to do the following:

- Develop and apply Data Structure Algorithms such as Stack, Linked-List, Queues and Binary Trees
- Develop programs and apply C++ Standard Template Library (STL)
- Mine the language additional Standard Library
- Analyze, evaluate and implement the reuse Programming Methodology
- Distinguish between Object Oriented Programming (OOP) and Structured Programming
- Develop and enhance OOP skills

**Course Objectives**

- Enrich program writings by implementing Object Oriented Programming Methodology
- Integrate language Standard Libraries in program design
- Implement data structure and algorithms
- Apply programming language Templates features
- Improve program Design and Analysis
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application

Topics to be covered

Topic 01 Review C++, Standard Template Library (STL)
Topic 02 Advanced File I/O
Topic 03 Objects, Classes and Friends
Topic 04 Inheritance and Polymorphisms
Topic 05 Virtual functions and functions templates
Topic 06 Error exceptions, Searching, and Sorting
Topic 07 Single and Double-linked List
Topic 08 Stacks and Hashing
Topic 09 Queues
Topic 10 Algorithms, Searching, Sorting, and Big Notation
Topic 11 Recursive
Topic 12 Binary Trees
Topic 13 Programming Labs, Assignments, Quizzes, and Exams
Syllabus

ITMD 413 Open Source Programming (Python – Summer 2015)
3 credit hours / 45 contact hours

Instructor: Industry Professor James Papademas

ISBN: 978-0132576376

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Contemporary open-source programming languages and frameworks are presented. The student considers design and development topics in system, graphical user interface, network, and web programming. Dynamic scripting languages are covered using object-oriented, concurrent, and functional programming paradigms. Concepts gained throughout the course are reinforced with numerous exercises which will culminate in an open-source programming project.

Prerequisites: ITMD 411

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

- Understand basic Python language and multi-functionality from procedural programming to Object Oriented programming concepts.
- Develop an understanding of scripting and the contributions of scripting languages.
- Develop an understanding of the built-in objects of Python.
- Be exposed to advanced applications such as TCP/IP network, GUI, Systems, Scientific and Database programming
- Perform multithreaded programming, Web applications with popular frameworks such as Django

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write Procedural and Object Oriented Python code.
- Write Python programs using subset of data types and using assignment, method calls, while loops, for loops, and conditionals.
- Use and manipulate several core data structures: Lists, Dictionaries, Tuples, and Strings.
- Employ objects, functions and modularity.
- Read data from text files, and write formatted text files.
- Interact with websites and load data from them (web scraping).
- Read and write data to/from SQL databases.
- Create a Python based Graphical User Interface using Python interfaces such as Tkinter.
- Author well constructed code and software documentation.
- Utilize an IDE to develop, test and debug Python code.
- Learn TDD (Test Driven Development) techniques to test and verify code structure.
**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01  Intro to Python. IPO.
- Topic 02  Simple Functions
- Topic 03  Decision Structures and Boolean Logic
- Topic 04  Repetition Structures
- Topic 05  Value-Returning Functions and Modules
- Topic 06  Files and Exceptions
- Topic 07  Lists and Tuples
- Topic 08  More about Strings
- Topic 09  Dictionaries and Sets. Mid Term.
- Topic 10  Classes and OOP
- Topic 11  Recursion
- Topic 12  Inheritance
- Topic 13  GUI programming
- Topic 14  Systems and Networking Programming Techniques
- Topic 15  Webwork, working with the DJANGO database, Final Exam Review
- Topic 16  Final Examination
Syllabus

ITMD 415 Advanced Software Development
3 credit hours / 45 contact hours

Instructor: Scott Spyrison


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course considers Web container application development for enterprise systems. The primary focus is on database connectivity (JDBC) integration with Web application programming using an enterprise-level application framework. A Web application term project considers the design and implementation of a database instance that serves as the information tier in a contemporary 3-tier enterprise solution. Prerequisites: ITMD 411

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student will have designed, produced, and documented several projects using the Java EE platform, culminating in a comprehensive and multi-tiered final project that builds cumulatively on prior work. Students will have deployed enterprise applications to modern application server and PaaS environments. Students will have demonstrated knowledge of Java EE specifications, APIs, architectures and techniques, including security, database persistence, business components, web services and presentation components.

Course Objectives: At the conclusion of this course, each successful student will be able to:

- Use and administer modern Java EE application server and PaaS environments
- Explain the benefits and best practices associated with multi-tier/multi-layer enterprise applications
  - Persistence Layer (a.k.a. Information or Database Tier)
  - Business and/or Service Layer (a.k.a. Business Tier)
  - Presentation Layer (a.k.a. Web Tier)
- Describe the concepts of Declarative Programming, Inversion of Control and Configuration by Exception, and correlate these concepts with Spring, CDI and other Java EE specifications
- Explain the use of design patterns within the Java EE platform
- Describe the origins, benefits and weaknesses of JSP and JSTL technology
- Create JSP and JSTL pages consisting of several standard tags
- Produce Servlet code to process HTTP requests
- Differentiate between JDBC and JPA
- Implement Java code that uses common JPA annotations and JPA Query Language
- Use associations and inheritance to demonstrate Object-Relational Mapping
- Create business components with EJB technology
- Create web service producers based on EJB business components
- Differentiate between EL, JSF, JSP, JSTL and Servlet technologies
- Produce MVC web applications
- Explain how JSF and Spring MVC relate to the MVC architecture
- Differentiate between authentication and authorization as security mechanisms
- Contrast Java EE with other modern frameworks
- Explain the benefits of Platform as a Service
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01 Introduction to Tools, Java EE, PaaS and Web Applications
Topic 02 JSP, JSTL, Servlets and MVC
Topic 03 Platform Basics, CDI, JDBC and Bean Validation
Topic 04 JPA and ORM
Topic 05 ORM and Managing Persistence
Topic 06 EJB
Topic 07 Midterm
Topic 08 Web Application Security
Topic 09 JSF and Spring MVC
Topic 10 JSF and Spring MVC
Topic 11 Additional Topics (PaaS, JAXB, JMS, WS, JavaMail, Spring, etc)
Topic 12 Additional Topics (PaaS, JAXB, JMS, WS, JavaMail, Spring, etc)
Topic 13 Putting it all Together
Topic 14 Final Project Workshop
Topic 15 Final Exam
Syllabus

ITMD 419 Topics in Software Development
Variable but normally 3 credit hours / 45 contact hours

Instructor: As assigned.

Textbook: Selected by the instructor as appropriate for the topic covered in the course.

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course will cover a particular topic in software development, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITMD 419/519 credit may be applied to a degree.

Prerequisites: Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate knowledge of software development as defined by the selected topic for the term.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topic covered in the course

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

Topics to be covered: Topics will be defined by the instructor for the topic covered in the course.
Syllabus

ITMD 421 Data Modeling and Applications
3 credit hours / 45 contact hours

Instructor: Katherine Papademas


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Basic data modeling concepts are introduced. Hands-on database design, implementation, and administration of single-user and shared multi-user database applications using a contemporary relational database management system. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

a) Use a Data Base Management System (DBMS) to create and manage files of data on a microcomputer system (data control language). The data structures for specific business applications will be created;

b) Enter, manipulate, and organize the data (data manipulation language);

c) Issue data queries;

d) Use a report generator;

e) Restructure files;

f) Use the screen for input and output;

g) Establish relationships between multiple files. The student will become aware of the need for security and back-up procedures as an integral part of data integrity; and

h) Work with such database management systems as Oracle 12c and Microsoft Acess, and SQL Developer.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write and resolve record retrieval using SQL scripting
- Create the five database objects: Tables, Views, Sequences, Indices, and Synonyms
- Perform simple and complex queries
- Perform queries using aggregate functions
- Create reports, text and graphical, using SQL Developer
- Recall and describe PL/SQL programming syntax, control structures and programming concepts
- Use functions (intrinsic and extrinsic), procedures, and packages.
- Perform simple and complex joins
**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computer Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Course Topics:**
Topics to be presented for students to achieve course objectives include:

Topic 01 Introduction to Databases and Database Modeling

Topic 02 Basic SELECT statements using Relational and Logical Operators

Topic 03 Single Row Functions - Character Functions

Topic 04 Aggregate Functions

Topic 05 Joins: Cross Joins, Inner Joins, Outer Joins, Self Joins

Topic 06 Subqueries; Inline Views; Multiple Row Operators (IN, ANY, ALL)

Topic 07 Views, With clause, Merge

Topic 08 Sequences, Indices, Synonyms - Creation syntax and use

Topic 09 Data Control Language: Commit, Rollback, Savepoint

Topic 10 Introduction to PL/SQL

Topic 11 PL/SQL – Selective Control Statements

Topic 12 PL/SQL – Iterative Control Statements, Cursors

Topic 13 PL/SQL – Data Collection Objects (Arrays, vArrays)

Topic 14 SQL Developer Report Generation; Triggers

Topic 15 Functions, Procedures, Packages.
Syllabus

ITMD 422 Advanced Database Management
3 credit hours / 45 contact hours

Instructor: TBD


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Advanced topics in database management and programming including client server application development are introduced. Expands knowledge of data modeling concepts and introduces object-oriented data modeling techniques. Students will learn the use of Structured Query Language in a variety of application and operating system environments.

Prerequisites: ITMD 421

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate advanced knowledge of relational database management using Structured Query Language (SQL), knowledge of SQL security, and will be able to use SQL in all major industry relational database management systems.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Use advanced tools to manage data in the Oracle RDBMS
  - Demonstrate use of online analytical processing (OLAP)
- Recall and describe common SQL security vulnerabilities
  - Explain methods and procedures to secure SQL data
- Use Microsoft SQL Server tools to manage data
  - Construct, manage, and query relational database structures using SQL in Microsoft SQL Server
  - Connect SQL Server database structures to XML and .Net
- Construct, manage, and query relational database structures using SQL in IBM DB2
- Construct, manage, and query relational database structures using SQL in PostgreSQL
- Construct, manage, and query relational database structures using SQL in MySQL

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
- (m) An understanding of best practices and standards and their application.
Topics to be covered:

Topic 01  Introduction to the Course
Topic 02  Advanced SQL statements
Topic 03  Advanced features of SQL commands and operator use
Topic 04  Grouping & Aggregation
Topic 05  Functions and Procedures
Topic 06  Advanced use of joins and correlated/non correlated subqueries
Topic 07  Stored procedures, triggers, and cursors
Topic 08  Recursive Queries
Topic 09  Advanced Aggregation Features
Topic 10  Accessing SQL from a Programming Language
Topic 11  Data and Referential Integrity
Topic 12  Transaction processing including locking processes
Topic 13  OLAP
Topic 14  Oracle Concurrency Control and Recovery
Topic 15  Oracle System Architecture
Topic 16  Oracle Database Administration Tools
Topic 17  SQL Vulnerabilities and Security
Topic 18  Introduction to Microsoft SQL Server
Topic 19  SQL Server: SQL Variations and Extensions
Topic 20  SQL Server: Query Processing and Optimization
Topic 21  SQL Server: Distributed Heterogeneous Query Processing
Topic 22  SQL Server: Server Programming in .NET
Topic 23  SQL Server: XML Support
Topic 24  SQL Server: SQL Server Service Broker
Topic 25  Introduction to IBM DB2
Topic 26  Using IBM DB2
Topic 27  Introduction to PostgreSQL
Topic 28  Using PostgreSQL
Topic 29  Introduction to MySQL
Topic 30  Using MySQL
Syllabus

ITMD 453 Intelligent Device Applications
3 credit hours / 45 contact hours

Instructor: Martin Schray


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Intelligent device application development is covered with proprietary enterprise and open-source technologies on media device, mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on simulated and real “smart” devices including smart phones, tablets, sensors, actuators, drones, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application.

Prerequisites: ITMD 311

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Engage students in learning about Mobile Application development. This course will focus on mobile applications for the Windows Store (e.g. Windows RT Apps) and Windows Phone stores via Universal Apps. Students will learn how to successfully build apps and have their apps accepted for the Windows/Windows Phone Store. You’ll complete this course with practical ideas and skills letting you build cool, edgy and useful apps that will be successful in the Windows/Windows Phone 8 Stores.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Create new universal applications projects targeting Windows and Windows Phone
- Create working universal applications for Windows and Windows Phone
- Design their application for low power consumption
- Read and write local files from their application
- Read and write network files from their application
- Create, read, update and delete database tables from their application
- Access web services from their application
- Use user interface components and layout techniques to create sophisticated user interfaces
- Use source control to perform source code management for their application
- Use unit testing to thoroughly test their application code
- Successfully submit and have their application accepted into the Windows and Windows Phone stores

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

Topics to be covered:

Topic 01 Introduction to the C# language
Topic 02 Introduction to XAML
Topic 03 Creating user interfaces in XAML
Topic 04 Introduction to building universal apps
Topic 05 Reuse of code and asset for universal app targeting Windows and Windows Phone
Topic 06 File IO and Network File IO
Topic 07 Using web services in your app
Topic 08 Using databases in your app
Topic 09 Using source management tools and techniques
Topic 10 Using unit testing to improve the quality and testability of your apps
Topic 11 Using Model View ViewModel (MVVM) to improve the quality of your apps
Topic 12 Using asynchronous programming technique to improve your application responsiveness
Topic 13 Target specific device features with your app
Topic 14 Designing and develop for low battery consumption
Topic 15 Store submission process
Topic 16 Final project
Syllabus

ITMD 454 Mass-Market Intelligent Device Applications
3 credit hours / 45 contact hours

Instructor: Peisong Huang


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Intelligent device application development is covered with leading mass-market and open-source technologies on media device, mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on simulated and real “smart” devices including smart phones, tablets, sensors, actuators, drones, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application.

Prerequisites: ITM 311

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: This course will focus on mobile applications design and development for the latest iOS platforms. Utilizing the latest contemporary toolkits, SDK/APIs, the student learns about the Apple iOS architectures and fundamentals; software engineering principles and best practices; design and development of iOS-based applications for iPhone and iPad devices. The student will create a number of small applications; each will highlight specific iOS features. These exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course will help the student to lay a solid foundation down the path to creating your own user-friendly, robust, efficient iOS applications in the future. By the end of the course, students will have the ability to create intermediate level iOS applications using key iOS features, the Swift programming language, and development/debugging tools. They will be better prepared to become professionals in the field of commercial iOS application development.

Course Objectives: At the conclusion of this course, each successful student will able to

- Describe the iOS Application development process including the use of iOS SDK/APIs
- Use development toolkits, XCode, Emulator, debugger, and logging mechanisms
- Employ Swift Programming language constructs such as class definitions
- Describe iOS UI components, controls and views, i.e. Navigation Controller, Table View
- Perform multimedia processing including image, sound and video animation
- Describe/create common applications such as messaging, maps, databases & networking
- Successfully build and publish apps for the Apple Store
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01 Intro to iOS app, XCode, Simple App, UI elements
Topic 02 Swift Values and Types
Topic 03 Simple App and Handling Basic Interaction
Topic 04 Swift Control Structures
Topic 05 More UI, Rotation and Layout
Topic 06 Multi-view Apps
Topic 07 Swift Classes and Objects
Topic 08 Tab Bars and Pickers
Topic 09 Table Views
Topic 10 Navigation Controllers and Table Views
Topic 11 Collection Views
Topic 12 Using Split Views and Popovers
Topic 13 Application Settings and User Defaults
Topic 14 Basic Data persistence
Topic 15 Documents and iCloud
Topic 16 Grand Central Dispatch, Background and You
Topic 17 Final Examination
Syllabus

ITMD 455 Intelligent Device Applications (iOS Development)
3 credit hours / 45 contact hours

Instructor: Peisong Huang


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Intelligent device application development is covered with various technologies on mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on emulated and real "smart" devices including smart phones, personal digital assistants, sensors, actuators, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course may be taken more than once but only for 6 hours of ITM 455/555 or ITMD 455/555. Prerequisites: ITM 311

This course is an elective in the Bachelor of Information Technology and Management degree.

Course Outcome: This course will focus on mobile applications design and development for the latest iOS platforms. Utilizing the latest contemporary toolkits, SDK/APIs, the student learns about the Apple iOS architectures and fundamentals; software engineering principles and best practices; design and development of iOS-based applications for iPhone and iPad devices. The student will create a number of small applications; each will highlight specific iOS features. These exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course will help the student to lay a solid foundation down the path to creating your own user-friendly, robust, efficient iOS applications in the future. By the end of the course, students will have the ability to create intermediate level iOS applications using key iOS features, the Swift programming language, and development/debugging tools. They will be better prepared to become professionals in the field of commercial iOS application development.

Course Objectives: At the conclusion of this course, each successful student will able to

- Describe the iOS Application development process including the use of iOS SDK/APIs
- Use development toolkits, XCode, Emulator, debugger, and logging mechanisms
- Employ Swift Programming language constructs such as class definitions
- Describe iOS UI components, controls and views, i.e. Navigation Controller, Table View
- Perform multimedia processing including image, sound and video animation
- Describe and create common applications such as messaging, maps, databases and networking
- Successfully build and publish apps for the Apple Store
**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

Topic 01 Intro to iOS app, XCode, Simple App, UI elements

Topic 02 Swift Values and Types

Topic 03 Simple App and Handling Basic Interaction

Topic 04 Swift Control Structures

Topic 05 More UI, Rotation and Layout

Topic 06 Multi-view Apps

Topic 07 Swift Classes and Objects

Topic 08 Tab Bars and Pickers

Topic 09 Table Views

Topic 10 Navigation Controllers and Table Views

Topic 11 Collection Views

Topic 12 Using Split Views and Popovers

Topic 13 Application Settings and User Defaults

Topic 14 Basic Data persistence

Topic 15 Documents and iCloud

Topic 16 Grand Central Dispatch, Background and You

Topic 17 Final Examination
Syllabus

ITMD 455 Intelligent Device Applications
3 credit hours / 45 contact hours

Instructor: James Papademas

ISBN: 978-1118102275

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Intelligent device application development is covered with various technologies on mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on emulated and real "smart" devices including smart phones, personal digital assistants, sensors, actuators, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course may be taken more than once but only for 6 hours of ITM 455/555 or ITMD 455/555. Prerequisites: ITM 311

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

- Understand the technical challenges posed by current mobile devices, including competitive devices and wireless communications; be able to evaluate and select appropriate solutions.
- Appreciate the need to keep up with rapid changes and new developments; be able to identify current trends in mobile communications technologies and systems and use of mobile analytics.
- Select and evaluate suitable software tools and Google APIs for the development of a particular mobile application and understand their strengths, scope and limitations.
- Use an appropriate application development to design, write and test small interactive programs for mobile devices (cells or tablets).
- Demonstrate a working app deployed to Google’s Play store.
- Work a fully documented, including wiring the prototype model of the app and presentation of the mobile app. Themes are selected based on current trends in the mobile world.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe and discuss Mobile Application development for Android platforms
- Successfully build and publish apps for the Android Marketplace.
- Utilize an IDE to develop, test and debug code for this development platform.
- Learn TDD (Test Driven Development) techniques to test and verify code structure

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

**Topic 01**  Intro to Android sdk and the Eclipse IDE

**Topic 02**  Application interface building, use of resources. Working the AVD. Debug monitoring.

**Topic 03**  Intro to fragments, views and adapters.

**Topic 04**  Intents and Broadcast recievers.

**Topic 05**  Use of Internet resources. XML parsing.

**Topic 06**  File saving states and preferences.

**Topic 07**  SQLite database. CRUD operations. Content values and cursors.

**Topic 08**  Content provider. Search activity.

**Topic 09**  Services, loaders, threads, alarms. Mid Term.

**Topic 10**  Expanding the UI. Working with action bars, navigation behavior, menus, dialogs & messaging. Notification management.

**Topic 11**  Advance user experience. Screen optimization, scalable graphics. Hardware sensors and acceleration. API Geocoding and maps.

**Topic 12**  Digitally signing applications.

**Topic 13**  Analytics.

**Topic 14**  Final project.

**Topic 15**  Final Exam Review

**Topic 16**  Final Examination
Syllabus

ITMD 455 Open Source Intelligent Device Applications
3 credit hours / 45 contact hours

Instructor: James Papademas


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Intelligent device application development is covered with mainstream open-source technologies on media device, mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on simulated and real “smart” devices including smart phones, tablets, sensors, actuators, drones, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. Prerequisites: ITM 311

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon completion of this course the student should be able to do the following:

- Understand the technical challenges posed by current mobile devices, including competitive devices and wireless communications; be able to evaluate and select appropriate solutions.
- Appreciate the need to keep up with rapid changes and new developments; be able to identify current trends in mobile communications technologies and systems and use of mobile analytics.
- Select and evaluate suitable software tools and Google APIs for the development of a particular mobile application and understand their strengths, scope and limitations.
- Use an appropriate application development to design, write and test small interactive programs for mobile devices (cells or tablets).
- Demonstrate a working app deployed to Google’s Play store.
- Work a fully documented, including wiring the prototype model of the app and presentation of the mobile app. Themes are selected based on current trends in the mobile world.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe and discuss Mobile Application development for Android platforms
- Successfully build and publish apps for the Android Marketplace.
- Utilize an IDE to develop, test and debug code for this development platform.
- Learn TDD (Test Driven Development) techniques to test and verify code structure
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

(h) Recognition of the need for and an ability to engage in continuing professional development.

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01  Intro to Android sdk and the Eclipse IDE
Topic 02  Application interface building, use of resources. Working the AVD. Debug monitoring.
Topic 03  Intro to fragments, views and adapters.
Topic 04  Intents and Broadcast receivers.
Topic 05  Use of Internet resources. XML parsing.
Topic 06  File saving states and preferences.
Topic 07  SQLite database. CRUD operations. Content values and cursors.
Topic 08  Content provider. Search activity.
Topic 09  Services, loaders, threads, alarms. Mid Term.
Topic 10  Expanding the UI. Working with action bars, navigation behavior, menus, dialogs & messaging. Notification management.
Topic 11  Advance user experience. Screen optimization, scalable graphics. Hardware sensors and acceleration. API Geocoding and maps.
Topic 12  Digitally signing applications.
Topic 13  Analytics.
Topic 14  Final project.
Topic 15  Final Exam Review
Topic 16  Final Examination
Syllabus

ITMD 460 Fundamentals of Multimedia
3 credit hours / 45 contact hours

Instructor: Ray Trygstad


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students are introduced to computer-based multimedia theory, concepts and applications. Topics include desktop publishing, hypermedia, presentation graphics, graphic images, animation, sound, video, multimedia on the World Wide Web and integrated multimedia authoring techniques. Prerequisites: Ability to use a graphical operating system.

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student in this survey course will be brought “up to speed” on the latest multimedia concepts, terms, and software types. While designed to give an overview of today’s multimedia world and production methods, students in the course will gain enough practical knowledge to begin creating productions for desktop and Internet use.

Course Objectives: At the conclusion of this course, each successful student will be able to:

- Describe and discuss current trends in multimedia by experiencing a variety of applications and development packages.
- Explain the preproduction process including content acquisition and development, process flow, team management and integration, and legal issues surrounding multimedia.
- Demonstrate technical knowledge and limited proficiency in designing production elements in each of the multimedia disciplines.
- Create a multimedia project for the desktop or Internet.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01 Introduction to Multimedia
- Topic 02 Design Concepts
- Topic 03 Presentation Graphics
- Topic 04 Typefaces & Fonts
- Topic 05 What is Multimedia?
- Topic 06 Digital Graphics
- Topic 07 Multimedia Hardware & Software
- Topic 08 Use of Color and Cultural Contexts of Color
- Topic 09 Desktop Publishing
- Topic 10 Preproduction
- Topic 11 Production Planning and Design
- Topic 12 Hypermedia Authoring Concepts
- Topic 13 User Interface Design
- Topic 14 Presentation Graphics Design
- Topic 15 Multimedia Sound
- Topic 16 The Multimedia Team
- Topic 17 File Compression
- Topic 18 Animation
- Topic 19 Video Production
- Topic 20 Digital Video
- Topic 21 Authoring Part 2: HTML & Web-Based Multimedia
- Topic 22 Designing Web-based Multimedia
- Topic 23 Producing Multimedia
- Topic 24 Content & Legal Considerations for Multimedia
- Topic 25 Multimedia Distribution
- Topic 26 Networking Multimedia
- Topic 27 Final Project Presentations
Syllabus

ITMD 462 Web Site Application Development
3 credit hours / 45 contact hours

Instructor: Jason Lambert

Textbook: Text will be assigned from online resources – Optional Textbooks include: Brown, Jeff Scott *The Definitive Guide to Grails* 2, Apress 2012 ISBN: 978-1430243779


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Programming the Common Gateway Interface (CGI) for Web pages is introduced with emphasis on creation of interfaces to handle HTML form data. CGI programming is taught in multiple languages. Security of Web sites is covered with an emphasis on controlled access sites. Setup, administration and customization of content management systems including blog and portal sites is introduced. Students design and create a Web site including basic CGI programs with Web interfaces and process data flows from online forms with basic database structures

Prerequisites: ITMD 361 or ITMD 461

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate a strong knowledge in the design and development of web applications. Students will be able to use both PHP and Joomla and additionally Groovy and Grails to create robust web applications that support modern web-services and interfaces. Students on completing this course will be able to successfully design, install, develop and rollout production-ready web applications. These web applications will connect securely to databases, handle user-entered data, and provide robust responses by using template html generated through PHP and Groovy as well as basic RESTful web services.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Outline the role of web applications in the modern web
- Identify the classes of application used across popular websites
- Detail server programming as a concept and demonstrate working functionality implementing those concepts
- Detail the use of PHP variables including arrays, functions and objects
- Explain the role of forms in web site applications
- Implement and describe basic security for form processing
- Outline the types of resources server applications can connect to and their advantages and disadvantages
- Outline the use and advantages of using source control for team-based development
- Describe the components and advantages of the Model View Controller architecture
- Describe and implement extensions of the MVC framework Joomla!
- Outline why Object-Oriented-Programming is essential for creating advanced and reusable functionality
- Explain the concept of scaffolding and ‘rails’ and the advantages it affords developers
- Create a basic web application using Grails and Groovy
• Describe how servers support dynamic interfaces and web services by creating JSON responses
• Implement basic RESTful web services and describe their role supporting modern user interfaces and inter-application communication
• Extend a Grails web application using plugins and extensions
• Outline server functionality required to support HTML5 web socket

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

Topic 01 Introduction to server side scripting with PHP
Topic 02 Implementing Basic Scripting for common server processing tasks
Topic 03 Connecting to resources
Topic 04 Managing projects with source control
Topic 05 Building Objects and reusable functionality with MVC
Topic 06 Introduction to Server Frameworks with Wordpress
Topic 07 Extending Server Frameworks
Topic 08 Introduction to Grails
Topic 09 Building with scaffolding, templates and Groovy
Topic 10 Exchanging data via services
Topic 11 Rapid deployment with plugins
Syllabus

ITMD 463 Intermediate Web Application Development
3 credit hours / 45 contact hours

Instructor: Raj Krishnan

Textbook: Web Resources: http://www.asp.net/web-forms;
http://www.microsoftvirtualacademy.com/training-courses/c-fundamentals-for-absolute-beginners

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: In-depth examination of the concepts involved in the development of Internet applications. Participants will learn the differences and similarities between Internet applications and traditional client/server applications. A discussion of the technologies involved in creating these Internet applications is included, and participants will learn to use these technologies to create robust server-side applications

Prerequisites: ITMD 411 and ITMD 461

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate the ability to build and deploy web forms applications using Visual Studio, and will understand the lifecycle of ASP.NET Web forms application and the basics of the C# language.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe the Application Life Cycle and Page life cycle in a web application running on IIS Server
- Build a basic data driven application using Webforms or MVC
- Use the assemblies, namespaces, packages and tools to build a web application
- Work with Visual Studio as an Integrated Development Environment to build a web application
- Utilize an application management system for lifecycle management particularly for source control
- Deploy a web application on Microsoft Azure

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

**Topic 01** Preparation for web development and .Net Framework  
Getting ready for the course – Installing Visual Studio Ultimate, Setting up Visual Studio On line account, Subscription to Azure, Familiarize with Visual Studio 2013 Update 3 IDE, Walk through a simple web project from end to end with source control and Azure Deployment; Introduction to .Net framework - CLR, CTS, IL, Module, Assembly, Name spaces, Framework Class Library

**Topic 02** Anatomy of a web application  
ASP.NET application and Page cycle; Tools to monitor web application (Fiddler, Developer tools); Web application architecture – Presentation, Business Logic, Data Access; Visual Studio 2013 IDE and how to use it: tips and Tricks

**Topic 03** Basic tools and technique for building web application using Visual Studio 2013

**Topic 04** Types of web application - Web Forms, MVC, Web Api, Single Page Application; HTML 5, CSS; BootStrap; Building a static web application, Master Page, Styles

**Topic 05** Using C# to build web application  
C# Fundamentals - Classes, Libraries

**Topic 06** Web Form Applications - Basic Server Controls

**Topic 07** ADO.NET connecting to data for Web Application  
ADO.NET architecture and overview  
ADO.NET Technology Options - Entity Framework, Linq; WCF data Services

**Topic 08** Data Driven Web applications and advanced Server Control  
Building simple data driven web form application; Model data binding in .Net 4.5; Advanced Server Controls

**Topic 09** Entity Framework and Web Applications  
Building an end to end web form application using Entity Framework  
Completing the data driven web from application with CRUD capabilities

**Topic 10** Introduction to Model View Controller; Building an MVC application using Visual Studio 2013

**Topic 11** Building simple services using Visual Studio - WCF, WCF data Services, Web Api

**Topic 12** Using Service layer in a Web Application  
Building a Web application that consumes services  
Building Modern Web Applications - Using Visual Studio to build HTML 5, CSS and JavaScript; Review of client side development framework,

**Topic 13** Introduction to Mobile Application development - Architectural choices; leveraging Visual Studio for Mobile Development

**Topic 14** Trends in Web Application Development

**Topic 15** Framework and Libraries; Angular, Ember, Knockout, Typescript; NodeJs; Other programming languages - Python; Database - NoSQL, Big Data

**Topic 16** Review of core technologies; Discussion of student projects
Syllabus

ITMD 464 Advanced Web Application Development
3 credit hours / 45 contact hours

Instructor: Raj Krishnan

Textbook: None Required; Reference Material on http://www.asp.net/;

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Strategies for management of electronic commerce allow students to learn to re-engineer established business processes to increase enterprise competitive advantage, provide better customer service, reduce operating costs, and achieve a better return on investment. Students will learn to evaluate, use, and deploy state-of-the-art tools and techniques needed to develop a reliable e-commerce offering on the Web. The course will cover state-of-the-art programming and development tools. This class will provide students with hands-on exposure needed to design and build a fully functional e-commerce Web site. Prerequisites: ITMD 463

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: This course builds on the foundation of intermediate web application development course ITMD-463 and will explore advanced tools and techniques to build and deploy web applications. Each successful student will learn how to architect web applications, evaluate and choose the right architecture for a web application depending on the requirements. Application Life Cycle management tools will also be introduced to understand how large software projects can be managed end to end. Students will use the free Visual Studio 2013 community edition to build advanced web application using Web Forms, MVC, Web Api and Single Page Application templates. In addition to C#, the students will also use HTML 5, CSS and JavaScript to build the applications and experience deploying the applications on Microsoft Azure.

Course Objectives: At the conclusion of this course, each successful student will able to:

- architect a layered web application using Application Life Cycle Management tool
- explain the Application Life Cycle and Page life cycle in a web application running on IIS Server
- use any of the application templates to build a web application - Web Forms, MVC, Web Api, Single Page Application
- use the advanced capabilities of C# Language, Entity Framework, LINQ
- secure application using authentication model
- apply Application Development best practices like SOLID principles
- Describe application of some of the advanced features like asynchronous programming, Socket programming (SignalR)
- Recall and describe options for mobile application development
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(m) An understanding of best practices and standards and their application.

Topics to be covered:
Review Application Life Cycle, Page Life Cycle, Basic ASP.NET concepts
Review C#, Entity Framework and LINQ
Advanced C# Language
Advanced Entity Framework concepts
Using LINQ
Working with Web Forms, MVC and Web API
Architecting Web Application
N Layered Web Application, Architecture tool in Visual Studio
ASP.NET Web Forms
Data Binding - Review
Ajax
Http Modules and Http Handlers
User Profiles, Authentication and Authorization
Enabling authentication, authorization in Web Forms; User Profile, ASP.NET memberships
MVC Application
Building Services
Building Mobile Application
Modern Web Application
Syllabus

ITMD 465 Rich Internet Applications
3 credit hours / 45 contact hours

Instructor: Jason Lambert


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to create interactive rich internet applications using web development frameworks, applications, and techniques that primarily operate on the client-side. These applications often exhibit the same characteristics as desktop applications and are typically delivered through a standards-based web browser via a browser plug-in or independently via sandboxes or virtual machines. Current software frameworks used to download, update, verify, and execute these applications are addressed as well as writing applications for deployment in these frameworks. Prerequisites: ITMD 361 or ITMD 461

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will be proficient in JavaScript and be able to use it to implement internet applications that utilize rich features.

Course Objectives: At the conclusion of this course, each successful student will able to:

• design and develop JavaScript powered internet applications
• use the suite of HTML5 JavaScript APIs, with advanced JavaScript programming and debugging techniques
• create user interfaces for responsive applications in modern browsers
• style their interfaces with modern applications of CSS and the standards in CSS3
• effectively utilize JavaScript libraries such as WebRTC, jQuery, processing and Node.js to enable rapid JavaScript application development..

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- **Topic 01** Server and client side technology
- **Topic 02** History of Internet applications and the web technologies
- **Topic 03** Browser technology and mobile applications
- **Topic 04** JavaScript as an enabling technology in modern web-based applications
- **Topic 05** Cascading Style Sheets (CSS) in modern web-based applications – specifically noting new CSS3 applications for animation
- **Topic 06** Applications deployment and scaling
- **Topic 07** Traditional and assisted AJAX techniques for asynchronously loading content
- **Topic 08** Interface mockups into working code prototypes
- **Topic 09** Advanced JavaScript programming paradigms including: Prototype, Object Oriented Programming (OOP), JavaScript Object Notation (JSON)
- **Topic 10** Potential security threats posed to internet applications
- **Topic 11** Programming cross-browser applications.
- **Topic 12** jQuery animations and CSS3 animation features.
- **Topic 13** Responsive design principles and techniques
- **Topic 14** Supporting of HTML5 features
- **Topic 15** Graphical applications utilizing the HTML5 canvas API
- **Topic 16** Geolocation HTML5 API
- **Topic 17** HTML5 file API and JavaScript
- **Topic 18** HTML5 Local Storage API
- **Topic 19** HTML5 Markup and DOCTYPE
- **Topic 20** HTML5 Audio and Video APIs
- **Topic 21** WebRTC library and legacy messaging solutions
- **Topic 22** Web Sockets for continuous communication
- **Topic 23** Node.js framework for application development
- **Topic 24** JavaScript HTML5 libraries including: Three.js; Processing.js; Angular.js; jQueryUI and CreateJS
Syllabus

ITMD 466 Service-Oriented Architecture
3 credit hours / 45 contact hours

Instructor: Omar Aldawud, PhD.

Box, Skonnard & Lam Essential XML: Beyond MarkUp, 1/E Addison-Wesley Professional 2000 ISBN: 978-0201709148

Additional Resources: Developing RESTful APIs with JAX-RS http://javabrains.koushik.org/ also look SOA demonstration using live web services. Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course covers IT enterprise systems employing web services technologies in SOA and ESB architectural patterns. The student considers SOA which defines and provisions IT infrastructure and allows for a loosely-coupled data exchange over disparate applications participating in business processes. The simplification of integration and flexible reuse of business components within SOA is greatly furthered by ESB. Lab exercises using contemporary tool-kits are utilized to reinforce platform-agnostic course topics. Prerequisites: ITMD 361 or ITMD 461 and ITMD 411
This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to:
- Describe Service Oriented Architecture (SOA) Computing and all of its building components including Service Depository, Service Producers and Consumer; SOA Design Principles; and OOP design principles
- Work with services in a heterogeneous environment
- Describe the working of SOA along with the protocols used
- Demonstrate an understanding of XML and related technologies
- Consider SOA which defines and provisions IT infrastructure and allows for a loosely-coupled data exchange over disparate applications participating in business processes
- Describe the Enterprise Service Bus as a framework and technology for SOA
- Build a complete SOA application to cover all components of an SOA architecture.
- Build the confidence in “speaking SOA”

Course Objectives: At the conclusion of this course, each successful student will able to:
- Develop an applications in a heterogeneous environment using state of the art SOA technologies.
- Develop, understand and implement the concept of service oriented architecture
- Demonstrate an understanding of XML including XML scheme, DTD, XPATH, XSLT
- Develop a DOM and Even based XML parsers
- Demonstrate an understanding of Web Services and related technologies: WSDL, SOAP
- Develop web services including deployment and associated WSDL, XML, SOAL documents and messages.
- Develop a complete SOA application with all of its components
• Demonstrate an understanding of the ESB architecture
• Demonstrate an understanding of the ESB architecture current implementations by major software development shops such as Oracle, IBM and Microsoft.

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(f) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, *information management*, programming, networking, and *web systems and technologies*.

(k) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- **Topic 01** SOA Introduction: Service and Objects/Components
- **Topic 02** Service Oriented Design Principles
- **Topic 03** Case Study building a complete SOA application in a heterogeneous environment
- **Topic 04** Web Services Specifications: Web Services Description Language (WSDL), Web Services Dynamic Discovery (WS-Discovery),
- **Topic 05** Web Services Endpoint Language (WSEL), Web Services Metadata Exchange (WS-MetaDataExchange), Web Services Policy Framework (WS-Policy)
- **Topic 06** XML Specification, DTD, XML Scheme, JAPX, XPath 1.0 and XPath 2.0, Creating XML Documents
- **Topic 07** XML Parsers (DOM, SAX)
- **Topic 08** SOAP, RESET, JSON
- **Topic 09** Web Service , Web Services Description Language (WSDL), Service Repositories: Universal Description, Discovery, and Integration (UDDI)
- **Topic 10** University Holiday
- **Topic 11** Web Services using SOAP, Web Services using REST, Web Services using JSON
- **Topic 12** Web Services Case Study
- **Topic 13** XML Document Design
- **Topic 14** Enterprise Service Bus (ESB) principles of the ESB architecture, ESB as service mediator, ESB as a framework, current implementations of ESB by vendor
- **Topic 15** Project Demonstration and implementation details in a heterogeneous environment
- **Topic 16** Final Examination
Syllabus

ITMD 467 Web Systems Integration
3 credit hours / 45 contact hours

Instructor: Jason Lambert

Textbook: Material for the course is provided as online reading and handouts, along with other supplemental material on the course web site at http://blackboard.iit.edu.

Course Description: In this project-based course, student teams will build an enterprise-grade website and web infrastructure integrating server-side applications, databases, and client-side rich internet applications as a solution to a defined business problem.

Prerequisites: ITMD 462 and ITMD 465

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to integrate the creation and deployment of an enterprise web site utilizing HTML5, CSS, and JavaScript; responsive server-side scripting, programming, applications, and databases; dynamic client-side programming; and responsive design principles and techniques. Students will learn principles of both ground-up and framework approaches to site creation for both local server and cloud-based deployments.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Identify, analyze and determine user needs and the optimal interface design for the users of an enterprise web system
- Create an manage a project plan for web site design, construction, and deployment
- Manage and configure web server infrastructure
- Create and deploy a modern enterprise web site including dynamic client-side applications; server-side scripting, applications, and database integration; and responsive design principles and techniques
  - Design and implement the web site using industry-standard tools
  - Design and implement the web site using existing industry-standard frameworks
  - Design, and implement the web site in a cloud environment using Software as a Service (SaaS) and Platform as a Service (Pass)

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(f) An ability to communicate effectively with a range of audiences
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

**Topics to be covered:**

- Topic 01 Problem definition and requirements
- Topic 02 Project planning and management
- Topic 03 System integration principles
- Topic 04 Optimal database integration
- Topic 05 Integration using frameworks
- Topic 06 Server configuration and management
- Topic 07 Cloud-based deployment models
- Topic 08 Project creation and deployment
- Topic 09 Project presentation
Syllabus

ITMD 469 Topics in Application Development
Variable but normally 3 credit hours / 45 contact hours

Instructor: As assigned.

Textbook: Selected by the instructor as appropriate for the topic covered in the course.

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course will cover a particular topic in application development, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITMD 469/569 credit may be applied to a degree.

Prerequisites: Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate knowledge of application development as defined by the selected topic for the term. The topics will most often be web or mobile device applications.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topic covered in the course

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

Topics to be covered: Topics will be defined by the instructor for the topic covered in the course.
**Syllabus**

**ITMM 470 Fundamentals of Management for the Technical Professional**
3 credit hours / 45 contact hours

**Instructor:** Madeleine England


Supplemental material is provided on the course web site at http://blackboard.iit.edu.

**Course Description:** This course serves as an introduction to the discipline of management, with a special emphasis being paid to managing and management issues in an innovative and high-tech organization and an IT environment. It is designed to integrate accepted theories with real world applications to provide students with basic knowledge and skills needed for managing technology organizations and the people who work in those organizations. This course covers current issues in management, the managerial environment, integrative management issues, and the traditional functions of management: planning, organizing, leading, and controlling. Lecture, discussion and class assignments given in the course are intended to help students understand the needs of organizations. **Prerequisites:** None

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** Students completing this course will be equipped with skills and knowledge allowing them to navigate the complexity of managing technical professionals in a high-technology environment, to optimize the effectiveness of technology staff and the impact of technology as a facilitating function in the modern business. They will be able to identify the principals of managing formal organizations, recognize the various challenges faced by today’s managers, and give examples of organizations engaging in the management functions of planning, organizing, leading and controlling.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Discuss the complexity of real-life organizations and management in a technology setting.
- Demonstrate an ability to function as a part of a team.
- Demonstrate an understanding of how to communicate to a wide range of audiences through effective and efficient presentations.
- Define organizational culture and explain how it impacts an organization, a group and an individual.
- Demonstrate the ability, through weekly discussions, to aptly challenge their own and other’s ideas with the goals of arriving at a more complete understanding.

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
An ability to communicate effectively with a range of audiences
An ability to analyze the local and global impact of computing on individuals, organizations, and society
Recognition of the need for and an ability to engage in continuing professional development
An ability to assist in the creation of an effective project plan.

Topics to be covered:
Topic 01 Hello & Welcome / Introductions
Topic 02 Review Course Expectations and Syllabus, Plagiarism
Topic 03 Management Environment & Organizational Culture
Topic 04 Financial Statements
Topic 05 Managerial Issues
Topic 06 Budgets
Topic 07 Planning
Topic 08 Project Management
Topic 09 IT Priorities: Prioritizing a Portfolio of Projects
Topic 10 IT and the Board of Directors: Governance and IT
Topic 11 Crisis: When Disaster Strikes IT
Topic 12 Damage: Dealing with the After-Effects of a Security Crisis in IT
Topic 13 Communication: Rebuilding Confidence in IT in the Wake of a Security Crisis
Topic 14 Organization Structure and Design
Topic 15 Project Overview
Topic 16 Effective Communication
Topic 17 Human Resources
Topic 18 Emerging Technology: Realizing Business Value and Managing Risk in IT
Topic 19 Vendor Partnering: Important Considerations When IT Outsources IT
Topic 20 Leadership & Trust
Topic 21 Managing Talent: Maximizing the Value of IT Talent
Topic 22 Standardization and Innovation: Managing and Investing in IT Infrastructure
Topic 23 Decision Making
Topic 24 Managing Risk
Topic 25 Managing Change
Topic 26 Innovation
Topic 27 Motivation
Topic 28 Foundations of Control
Topic 29 Project Consultation
Topic 30 Class Presentations
Topic 31 Final Examination
Syllabus

ITMM 471 Project Management for ITM
3 credit hours / 45 contact hours

Instructor: Dennis J. Hood


Course Description: Basic principles of project management are taught with a particular focus on project planning for information technology hardware, software and networking project implementation. Management of application development and major Web development projects will also be addressed. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate a solid foundation in project management concepts and best practices with an emphasis on information technology projects and the unique challenges they pose including technical, financial and human resource issues; and will demonstrate effective planning and decision making skills for both near-term operational and long-term strategic situations.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe using appropriate terminology the current state and best practices of information technology project management.
- Analyze project management decisions in terms of technical, cost-benefit and human resource considerations.
- Assess the risk exposure of an IT project and develop plans for mitigating and managing risks.
- Develop mechanisms for capturing and reporting objective measures of project progress.
- Apply frameworks for effective planning and decision making regarding IT project management.
- Describe the human resource, financial, and technical responsibilities of an IT project manager, including the unique challenges associated with outsourcing, off-shoring, and globalization.
- Discuss the impact of quality management and process maturity on IT project management.
- Discuss the role of portfolio management in realizing corporate strategic vision.

ABET Criterion 3 Outcomes The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(d) An ability to function effectively on teams to accomplish a common goal.
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities.
(f) An ability to communicate effectively with a range of audiences.
(h) Recognition of the need for and an ability to engage in continuing professional development.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

Topics to be covered:

Topic 01 Terminology
Topic 02 Life cycles and process
Topic 03 Strategy, scope and project initiation
Topic 04 Planning, communication and documentation
Topic 05 Risk management and uncertainty
Topic 06 Schedule management and estimation
Topic 07 Monitoring and control
Topic 08 Budget management and value
Topic 09 Programs and portfolio management
Topic 10 Quality and stakeholder management
Topic 11 Auditing and closing
Topic 12 Process improvement and distressed projects
Topic 13 Teams, outsourcing and off-shoring
Topic 14 Agile and Extreme projects
Topic 15 Enterprise project management
Topic 16 Final examination
Syllabus

**ITMM 481 IT Entrepreneurship**
3 credit hours / 45 contact hours

**Instructors:** Carl Robert Carlson, Ph.D. and Adarsh K. Arora, Ph.D


**Course Description:** This course prepares students to become leaders in information technology and to build ITM companies. Students design and develop a prototype ITM product and prepare a business plan and venture proposal presentation. Prerequisite: Experience in IT field.

**Prerequisites:** None

This is a selected elective in the Bachelor of Information Technology & Management degree.

**Course Outcome:** This course offers a comprehensive, integrated, and proven step-by-step approach to creating innovative, highly successful IT enterprises. Students follow a multi-step process resulting in their presenting a product/service plan for building a start-up IT enterprise. Students are expected to be prepared to discuss their ideas in each class as venture experience faculty mentor them in the formulation of their plan.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Analyze a problem, and identify and define the computing requirements appropriate to its solution, specifically by developing a technology based solution to a real world problem as the basis for a start-up venture
- Assist in the creation of an effective project plan, specifically through developing and presenting a product/service plan for a possible IT start-up
- Analyze the local and global impact of computing on individuals, organizations, and society, specifically by articulating the value proposition associated with their proposed product/service and the scope of its marketability
- Function effectively on teams to accomplish a common goal, specifically by contributing to the development of the product/service business plan
- Exhibit an ability to communicate effectively with a range of audiences

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(n) An ability to assist in the creation of an effective project plan.
Topics to be covered:
Follows the 24 step methodology described in the textbook, which the instructors have had success applying in their start-up ventures

Topic 01  Course Overview & Possible Projects
Topic 02  Market Segmentation & Select A Beachhead Market
Topic 03  Build End User Profile
Topic 04  TAM Analysis, Customer Profile and Next 10 Customers
Topic 05  Use Case Needs Analysis
Topic 06  High Level Product Specification, Prototype Specification
Topic 07  Quantify Value Proposition
Topic 08  Define Your Core Values
Topic 09  Chart Competitive Position
Topic 10  Determine Customer Decision Making Unit, Roles, Influences
Topic 11  Define Process To Acquire Paying Customer
Topic 12  Sales Process
Topic 13  Design a Business Model
Topic 14  Market Structure
Topic 15  Calculate Lifetime Value and Cost of Customer Acquisition
Topic 16  Identify Key Assumptions
Topic 17  Test Key Assumptions
Topic 18  Show the Dogs Will Eat the Dog Food
Topic 19  Determine Market Size & Product Plan
Topic 20  Fund Strategy
Topic 21  Review Presentation Outlines
Topic 22  Student Presentations
Syllabus

ITMD 485 Legal and Ethical Issues in Information Technology
3 credit hours / 45 contact hours

Instructor: Ray Trygstad


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Current legal issues in information technology are addressed including elements of contracting, payment systems and digital signatures, privacy concerns, intellectual property, business torts, and criminal liability including hacking, computer trespass and fraud. Examination of ethical issues including privacy, system abuse, and ethical practices in information technology equip students to make sound ethical choices and resolve legal and moral issues that arise in information technology. Prerequisites: None

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate an understanding of professional, ethical, legal, security and social issues and responsibilities in information technology; and will demonstrate an ability to make sound ethical choices and resolve legal and moral issues that arise in professional practice.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Discuss basic concepts of ethics, morality and the law.
- Describe the differences between ethics, morality and law.
- Identify ethical procedures and behaviors in the organization related to the employment and use of information technology.
- Identify key ethical concerns of information technology professionals.
  - Recognize and describe Codes of Ethics and Professional Conduct and identify the industry organizations they are associated with.
- Describe issues related to privacy and confidentiality as they relate to information technology.
  - Identify key laws and regulations related to privacy and confidentiality.
- Discuss issues in cybercrime and technology-facilitated crime.
  - Identify key laws and regulations related to cybercrime.
- Describe issues issues related to intellectual property, intellectual property law, freedom of expression, and intellectual freedom as they relate to information technology.
  - Describe the differences between copyrights, patents, trademarks and trade secrets.
- Explain specific issues of contract law common in information technology
  - Describe and discuss issues related to outsourcing and Service Level Agreements.
- Discuss the social impact of information technology on society.
  - Explain the concept of “digital divide”, identify some causes and discuss possible solutions.
  - Identify underlying gender, cultural and diversity related issues in information technology.
- Create policies and procedures for an organization that are ethically, morally and legally sound.
  - Produce an Acceptable Use Policy with appropriate mechanisms for enforcement.
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development

Topics to be covered:
01  Introduction to Ethics and the Law
02  Ethical Concepts and Theories
03  Ethics, Law and Conflict
04  Professional Ethics in Information Technology
05  Privacy
06  Security and Compliance
07  CyberCrime and Technology-Facilitated Crime
08  Intellectual Property Issues
09  Regulating Commerce and Speech
10  Information Technology Contract Law: SLAs and Outsourcing
11  Technology, Work and the Digital Divide
12  Online Identity and Community
13  Ethics, Law and Emerging Technologies
14  IT Law and Ethics in Context
15  Final Project Presentations / Final Exam Review
16  Final Examination
Syllabus

ITMO417 Shell Scripting for System Administration
3 credit hours / 45 contact hours

Instructor: Sheikh Shamsuddin (sam)


Other supplemental material (Awk, Perl, PowerShell) may be found on the course web site at http://blackboard.iit.edu

Course Description: Focuses on preparation of shell scripts to enhance and streamline system administration tasks in all contemporary server operating systems. Scripting will be taught in both native and portable environments. The course will address shell programming, regular expressions, common and system-specific shell utilities and built-in commands, user defined and shell variables, flow control structures, shell functions, and the creation and execution of shell scripts. Homework and hands-on exercises will provide practical experience in contemporary server environments. Prerequisite: ITMO 456

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcomes: Each successful student will gain the experience and skills necessary to write, compile, execute, troubleshoot, and resolve problems using major Shell Scripting Languages - Bash, AWK, Perl, and PowerShell. They will develop the ability to develop and identify important language standard libraries and utilities; the ability to locate and use help resources; experience in software application and development theory and concepts; and skills necessary to write system programs in Linux and Windows operating systems

Course Objectives: At the conclusion of this course, each successful student will able to:

- Write scripts and resolve programming problems using Bash, Perl, and PowerShell
- Describe the use of and apply script utilities such as grep, sed, and system commands
- Complete programming assignments using various scripting languages
- Explain and perform the integration and implementation of scripting and operating system commands
- Recall scripting syntax and the language features
- Effectively write Shell Scripting Programs

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.
Topics to be covered

Topic 01  Linux operating system review
Topic 02  Shell commands. Shell Variables. Linux utilities
Topic 03  Selection control, I/O, redirection, file I/O
Topic 04  Loops, functions, and array
Topic 05  Regular expressions, grep and sed Linux utilities
Topic 06  AWK Programming
Topic 07  Perl Programming – scalar variables, Lists and Arrays
Topic 08  Hashes
Topic 09  Perl selection control, loop and subroutine
Topic 10  Perl file I/O
Topic 11  Programming in PowerShell: Variable, selection control, and loop
Topic 12  Array, modules, and File I/O
Topic 13  Programming Labs, Assignments, Quizzes, and Exams
Syllabus

ITMO433  Enterprise Server Administration
3 credit hours / 45 contact hours

Instructor: Sheikh Shamsuddin (Sam)


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Catalog Description: Students learn to set up, maintain, and administer x86-based servers and associated networks using a contemporary industry-standard proprietary operating system. Topics include hardware requirements; software compatibility; system installation, configuration and options, and post-installation topics; administrative and technical practices required for system security; process management; performance monitoring and tuning; storage management; back-up and restoration of data; and disaster recovery and prevention. Also addressed is configuration and administration of common network and server services such as DNS, DHCP, remote access, email, basic virtualization, web and web services, and more.

Prerequisites: ITM 301 and ITMO 440
This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Upon successful completion of the course the student will able to:

- Administer x86-based servers such as Windows Enterprise Server 2008 and 2012
- Configure server, network, and software applications setup environment
- Set up Active Domain within a Client Server Environment
- Describe a server administrator’s responsibilities and support of enterprise applications
- Analyze server recurring issues and work on sustainable solutions
- Provide support the planning, development, integration, testing and management of IT services

Course Objectives: At the conclusion of this course, each successful student will able to:

- Install and manage Windows Enterprise Server 2008 and Active Directory Domains
- Manage server, active directory, client computers and users
- Apply server security, software distribution and updates
- Perform schedules vulnerability-assessment scans and monitoring server performance
- Design Infrastructure requirements
- Set up and manage server system virtualization
• Perform day-to-day management of the server operating system, file structure, and directory services
• Monitor logs for firewalls and intrusion detection systems

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

**Topics to be covered**

- Topic 01 Installation and configuration of Windows Server
- Topic 02 Account Management and Active Directory implementation
- Topic 03 Managing and Troubleshooting Resource Access
- Topic 04 Configuring and Managing Data Storage, Application and Data Provisioning
- Topic 05 Managing Network Services, Server, and Network Monitoring
- Topic 06 Deploying IIS and Active Directory Certificate Services
- Topic 07 Configuring Remote Access Service
- Topic 08 System and desktop Virtualization
- Topic 09 Securing the Operating System. Managing Reliability and Availability
- Topic 10 Hands-on Labs, Assignments, Quizzes, and Exams
Syllabus

ITMO 440 Introduction to Data Networks and the Internet
3 credit hours / 45 contact hours

Instructor: Carol Davids


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Catalog Description: This course covers current and evolving data network technologies, protocols, network components, and the networks that use them, focusing on the Internet and related LANs. The state of worldwide networking and its evolution will be discussed. This course covers the Internet architecture, organization, and protocols including Ethernet, 802.11, routing, the TCP/UDP/IP suite, DNS, SNMP, DHCP, and more. Students will be presented with Internet-specific networking tools for searching, testing, debugging, and configuring networks and network-connected host computers. There will be opportunities for network configuration and hands-on use of tools. Prerequisites: none

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcomes: The successful student will be able to use protocol analysis tools combined with the native tools provided by computer Operating Systems and basic network protocols to analyze network problems and their solutions. Additionally, the successful student will be able to design simple data networks composed of hubs, switches and routers and create the necessary network and sub-network IDs for those networks. The successful student will refer to original sources including standards bodies to keep their knowledge and skills current.

Course Objectives: At the conclusion of this course, the successful student will be able to:

- Explain the use of the layered data communications model and use that model in the analysis of a data application on an IP data network.
- Capture and analyze a trace of the protocol data messages on an IP network.
- Explain physical-layer operations that enable the transfer of digital information by means of physical signals, including the use of analog signals to represent digital data.
- Explain the significance of the data-link layer and give examples of data-links in common use today, including DOCSIS, Ethernet II and IEEE 802.11.
- Solve problems based on the header and trailer fields of the Ethernet II and IEEE 802.3.
- Locate ARP messages in a protocol trace and explain the reason for their presence.
- Identify network problems using the information available in ICMP messages.
- Solve problems and explain functions and behaviors such as fragmentation, type of service and routing, based on identification of the values of the header fields of the IP Datagram.
- Solve problems related to IPv4 address space, including the creation of IP sub-networks.
- Solve problems and explain functions and behaviors related to a router’s use of its routing table to determine where to send an incoming IP datagram.
- Choose whether a network should use RIP, OSPF or Border Gateway routing protocol.
Explain how Connections are created by TCP, how Applications send data using message sequence charts, and describe the use of Sequence and Acknowledgement Numbers.

Analyze protocol traces of applications based upon HTTP and other Layer 5 protocols.

Explain the concept of State and solve problems related to the state of a TCP connection at both the client side and the server side using a State Transition Diagram.

Explain the use of UDP and identify applications that use UDP for their transport.

Explain the functions provided by the DHCP and DNS services on an IP network.

Explain the difference between streaming-media applications and real-time media applications and identify these differences on an IP network using protocol traces.


Write a project technical paper which presents results and draws conclusions.

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

**Topics to be covered:**

Introduction, Terminology, Standards

01 Layer 1: Analog Signals

02 Layer 1: Digital Signals

03 Layer 1: Digital Transmission

04 Layer 2: Ethernet LAN - Ethernet Frame

05 Layer 2: Connecting Devices: Hubs, Switches, Routers

06 Layer 3: Internet Protocol – PDU

07 Layer 3: IP Addresses

08 Layer 3: ARP & DHCP

09 Layer 3: ICMP

10 Layer 3: Routing and Routing Protocols

11 Layer 3: Error Control - Detection and Correction

12 Layer 4: Process to Process Delivery - UDP and TCP

13 Layer 4: UDP

14 Layer 4: TCP

15 Layer 5: Domain Name Service / Written Project Report Submission

16 Final Examination
Syllabus

ITMO 440 Introduction to Data Networking and the Internet
3 Credit Hours / 45 Contact Hours

Instructor: Louis F. McHugh IV


Course Description: This course covers current and evolving data network technologies, protocols, network components, and the networks that use them, focusing on the Internet and related LANs. The state of worldwide networking and its evolution will be discussed. This course covers the Internet architecture, organization, and protocols including Ethernet, 802.11, routing, the TCP/UDP/IP suite, DNS, SNMP, DHCP, and more. Students will be presented with Internet-specific networking tools for searching, testing, debugging, and configuring networks and network-connected host computers. There will be opportunities for network configuration and hands-on use of tools. Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: The course is a foundation course in the basics of Data Communications and Computer Networks. It is intent is to serve as a basis for practical studies in field of Computer Networking and Network Administration. Upon completion, a student should be able to understand how a Computer Network works from both a practical and theoretical perspective. They should understand OSI & TCP/IP Models, Various Networking Protocols, Data Circuits, Switches, and Routers. They will also have an understanding of troubleshooting and management of networks by usage of various tools.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Outline the basics components of a computer network using both the TCP/IP protocol suite and the OSI model.
- Identify the various types of network systems, including local area networks, metropolitan area networks, wide area networks, and voice/data delivery networks.
- Enumerate the various transmission media commonly used in carrier systems, i.e. twisted pair, coaxial cable, fiber optic cable, terrestrial microwave, satellite, as well as other wireless technologies.
- Recognize the basics of data communications, including data, signals, conversions between data and signals, encoding techniques, multiplexing, and modulation.
- Identify the various types of error detection and error corrections schemes.
- Identify the basics of T-carrier systems, frame relay, asynchronous transfer mode, DSL, and cable modems, and be able to compare and contrast their characteristics.
- Describe the basic operating procedures of the Internet and how it relates to data and voice communications.
- Enumerate the differences between the wireless telephone systems D-AMPS, TDMA, CDMA, GSM, and others.
- Document the characteristics of local area networks, including hub and switch technologies.
- Complete a case study in which, given a minimum set of requirements, the student will recommend wide area network solutions.
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

Topics Covered:

- Topic 01 Introduction to Computer Networks and Data Communications
- Topic 02 Fundamentals of Data and Signals
- Topic 03 Conducted and Wireless Media
- Topic 04 Making Connections
- Topic 05 Making Connections Efficient: Multiplexing and Compression
- Topic 06 Errors, Error Detection, and Error Control
- Topic 07 Local Area Networks
- Topic 08 Local Area Networks: Part II
- Topic 09 Introduction to Metropolitan and Wide Area Networks
- Topic 10 The Internet
- Topic 11 Voice and Data Delivery Networks
- Topic 12 Network Security
- Topic 13 Network Design and Management
Syllabus

ITMO 441 Network Administration and Operations
3 credit hours / 45 contact hours

Instructor: Kevin Vaccaro


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn the details, use, and configuration of network applications. Currently protocols and application technologies considered include SNMP, SMTP, IMAP, POP, MIME, BOOTP, DHCP, SAMBA, NFS, AFS, X, HTTP, DNS, NetBIOS, and CIFS/SMB. Windows workgroups and domains: file and printer sharing, remote access, and Windows networking are addressed. A research paper in the above topic areas is required.

Prerequisite: ITMO 440

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each student will be able to understand and implement various protocol service using the Linux operating system. Each student will be able to understand how data flows thru the local network and the internet. A paper will be required on a research topic of their choice.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Recall and describe the different services available at the Application Level of the TCP/IP model using the Linux operating system
- Explain each application protocol in detail
- Use the Linux operating system to implement different application services as hands on labs
- Perform original research on a chosen Network related topic

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(l) An ability to effectively integrate IT-based solutions into the user environment.
Topics to be covered:

- Topic 01  Dynamic Host Configuration Protocol
- Topic 02  The Domain Name System
- Topic 03  File Transfer Protocol
- Topic 04  SMTP and Email
- Topic 05  Hypertext Transfer Protocol
- Topic 06  Securing Sockets with SSL
- Topic 07  Simple Network Management Protocol
- Topic 08  Secure Shell (Remote Access)
- Topic 09  Firewalls
- Topic 10  IP Security
- Topic 11  Multimedia Technologies
- Topic 12  Network File Systems
- Topic 13  Final Paper / Final Exam Review
- Topic 14  Final Examination
Syllabus

**ITMO 444 Cloud Computing Technologies**
3 credit hours / 45 contact hours

**Instructor:** Jeremy Hajek


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

**Course Description:** The elements of elastic, fault tolerant computing applications hosted on dynamically-sealed virtual resources that are available as services will be studied in this course. Commercial and local cloud architectures are examined and compared. An integration of course topics will result in a project employing various cloud technologies. *Prerequisites:* ITMD 411 and ITMO 456

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** Each successful student will demonstrate an understanding how component failure is tolerated in an elastic cloud system. They will be able to administer and choose components from industry standard cloud platforms. Students will be able to successfully build their own elastic scaling cloud application.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Discuss basic concepts of cloud elasticity and fault tolerance
- Make application decisions based on these concepts
- Describe how development decisions effect Operations actions
- Design cloud systems with proper tooling and introspection to manage large scale systems
- Describe proper system scaling techniques – scale up vs scale out and when to use them
- Explain XYZ scaling
- Explain design patterns for scalability
- Explain the different types of load-balancing
- Explain and deploy auto-scaling architectures
- Use industry standard source control

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(m) An understanding of best practices and standards and their application.
Topics to be covered:

- Topic 01  Introduction to the Distributed World
- Topic 02  Designing for a Distributed World
- Topic 03  Introduction to AWS, Azure, and Eucalyptus cloud services
- Topic 04  History of AWS services
- Topic 05  Deployment of AWS infrastructure (EC2, S3, EBS)
- Topic 06  Deployment of AWS advanced infrastructure
- Topic 07  Designing for Operations
- Topic 08  Selecting a service platform
- Topic 09  Application Architectures
- Topic 10  Design Patterns for Scaling
- Topic 11  Design Patterns for Resiliency
- Topic 12  Operations in a Distributed World
- Topic 13  Service Delivery: The Build Phase
- Topic 14  Service Delivery: The Deployment Phase
- Topic 15  AWS Cloud Formation and automated deployment of cloud resources
- Topic 16  Final Examination
Syllabus

ITMO 450 Enterprise End-User System Administration
3 credit hours / 60 contact hours

Instructor: Jeremy Hajek

Textbook: Ballew, Jolli Configuring Windows 8.1, Microsoft Press 2014
ISBN: 978-0735684775

Thomas, Orin Managing Enterprise Devices and Apps, Microsoft Press 2014

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to set up, configure, and maintain end-user desktops and portable devices in an enterprise environment using contemporary proprietary operating systems, including the actual installation of the operating system in a networked client-server environment. User account management, security, printing, disk configuration, and backup procedures are addressed. Administration of central server resources associated with management and provisioning of end-user systems in workgroups, domains, is addressed. Prerequisites: None

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will be able to demonstrate an understanding of operating system capabilities to best choose the correct technology fit for enterprise requirements. This involves physical, virtual, mobile/tablet based computing and security for these distinct areas.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Discuss the basic history of Microsoft Windows and different versions
- Describe the differences and reasons why between each version.
- Prepare a system for upgrade to the latest Windows operating system.
- Be able to install Windows
- Explain how drivers are installed and how driver signing works
- Describe the nature of the Windows Store and Store Apps
- Deploy Group Policy in conjunction with App Locker, IE, and Hyper-V
- Describe the nature of Workgroup networking and security levels
- Maintain system updates and the options for Web based and local updates
- Use Intune service to manage tablet and mobile devices.
- Use third party deployment tools
**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01 Introduction to History of Windows
- Topic 02 Comparison of Window’s Versions
- Topic 03 Windows 8.1 upgrade readiness
- Topic 04 Windows Data Migration & Installation
- Topic 05 Migration of User Data
- Topic 06 Device Drivers and Window’s Store
- Topic 07 App Locker. IE, Hyper-V
- Topic 08 Network Connectivity
- Topic 09 Authentication & File Access
- Topic 10 WSUS & BitLocker
- Topic 11 Managing Applications
- Topic 12 Managing Mobile Devices
- Topic 13 Third Part Deployment Tools
- Topic 14 Discussion of Domains and Windows Deployment Services
- Topic 15 Final Project Presentations / Final Exam Review
- Topic 16 Final Examination
Syllabus

ITMO 453 Open Source Server Administration
3 credit hours / 45 contact hours

Instructor: Jeremy Hajek


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to set up, configure, and administer an industry-standard open source server operating system including integration with client systems using a variety of operating systems in a mixed environment. Topics include hardware requirements; software compatibility; administrative and technical practices required for system security; process management; performance monitoring and tuning; storage management; back-up and restoration of data; and disaster recovery and prevention. Also addressed are configuration and administration of common network and server services such as DNS, DHCP, firewall, proxy, remote access, file and printer sharing, email, web, and web services as well as support issues for open source software. Prerequisites: ITM 301 and ITMO 456

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate an understanding of creating and maintaining Linux based networks and services. They will have the ability to maintain existing networks and services as well as understand the right tools and services to deploy in a new Linux network.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Discuss basic concepts of system resources and resource use
- Be able to load kernel modules and compile a Linux kernel
- Understand init systems and discuss the differences between SysVInit and systemd
- Understand the system boot and loading process with boot loaders
- Understand the Linux filesystem, including mount points and LVM partitioning
- Understand how to use iSCSI and other networked filesystems such as NFS and SAMBA
- Understand the use of webservers, and other networked based servers and their implementation

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01 Measure and Troubleshoot Resource Usage and Predict Future Resource Needs
- Topic 02 Kernel Components
- Topic 03 Kernel runtime management and troubleshooting
- Topic 04 Customizing SysV-init system startup
- Topic 05 Systemd start up and introduction
- Topic 06 System Recovery
- Topic 07 Alternate bootloaders
- Topic 08 Filesystem and Devices
- Topic 09 Maintaining a Linux filesystem
- Topic 10 Advanced Storage Device Administration
- Topic 11 Adjusting Storage Device Access
- Topic 12 Logical Volume Manager
- Topic 13 Network Configuration
- Topic 14 System Maintenance tools, Domain Name Server, Web Services, and Apache and Nginx
- Topic 15 File Sharing E-Mail Services, and System Security
- Topic 16 Final Exam
Syllabus

**ITMO 454/ITMO 554** - Operating System Virtualization
3 Credit Hours / 45 Contact Hours

**Instructor:** Adjunct Professor Louis F. McHugh IV


**Optional Texts** (Available online from books24x7, IIT Galvin Library):

**Course Description:** This course will cover technologies allowing multiple instances of operating systems to be run on a single physical system. Concepts addressed will include hypervisors, virtual machines, para-virtualization, and virtual appliances. Both server and desktop virtualization will be examined in detail, with brief coverage of storage virtualization and application virtualization. Business benefits, business cases, and security implications of virtualization will be discussed. Extensive hands-on assignments and a group project will allow students to gain first-hand experience of this technology. 

**Prerequisites:** ITMO 456

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** The course is a course in the understanding, planning, design, implementation, and support of operating systems from a virtual perspective. Upon completion, a student should be able to understand how a hypervisors, virtual machines, para-virtualization, and virtual appliances from both a desktop and server approach.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Demonstrate foundation knowledge and application of operating system virtualization as it applies in the management of servers and desktop workstation in a business environment
- Install, configure, use and manage a variety of operating system virtualization environments
- Intelligently assess enterprise needs for virtualization, then select and apply the best solution.
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice

(m) An understanding of best practices and standards and their application

Topics Covered:

Topic 01 Introduction to Virtualization
Topic 02 Virtualization Application Overview
Topic 03 Hypervisors, VMs, and Paravirtualization
Topic 04 Prepare for Virtualization
Topic 05 Virtual Appliances
Topic 06 Testing and the Lab
Topic 07 Server Virtualization
Topic 08 Deploying Server Virtualization
Topic 09 Desktop Virtualization
Topic 10 Application Virtualization
Topic 11 Storage Virtualization
Topic 12 Managing Virtualization
Topic 13 Security Implications of Virtualization
Topic 14 The Future of Virtualization
Syllabus

ITMO 456 Introduction to Open Source Operating Systems
3 credit hours / 45 contact hours

Instructor: Jeremy Hajek


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to set up and configure an industry-standard open source operating system, including system installation, and basic system administration; system architecture; package management; command–line commands; devices, filesystems, and the filesystem hierarchy standard. Also addressed are applications, shells, scripting and data management; user interfaces and desktops; administrative tasks; essential system services; networking fundamentals; and security, as well as support issues for open source software. Multiple distributions are covered with emphasis on the two leading major distribution forks.

Prerequisites: None

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate an understanding of installation, configuration, and administration of industry standard open source operating systems. They will be able to troubleshoot and resolve Linux installation and common systems issues. They will be able to use and administer Linux as both a server and a desktop operating system.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Explain and understand the Unix/Linux philosophy
- Explain the difference between Free Software and Open Source software
- Describe what Linux is and how it relates to different distributions
- Install a Linux operating system
- Explain the structure of the Linux filesystem
- Explain pathing
- Describe and use the Linux Shell
- Recall and employ Linux command line utilities
- Use the vi editor
- Explain the nature of various administration tasks

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01  Introduction to Opensource software
- Topic 02  Installing Linux Operating Systems
- Topic 03  Using Fedora Linux
- Topic 04  Linux Filesystems
- Topic 05  Linux Shell
- Topic 06  Linux Utilities
- Topic 07  vi and text editors
- Topic 08  Bash shell scripting
- Topic 09  Administration tasks
- Topic 10  Remote Administration - SSH
- Topic 11  Deployment tools
- Topic 12  Files Directories and FileSystems
- Topic 13  Mounting and formatting of drives
- Topic 14  Building and compiling a kernel
- Topic 15  Final Exam Review
- Topic 16  Final Examination
Syllabus

ITMD 456 Introduction to Open Source Operating Systems
3 credit hours / 45 contact hours

Instructor: Sean Hughes-Durkin


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to set up and configure an industry-standard open source operating system, including system installation, and basic system administration; system architecture; package management; command–line commands; devices, filesystems, and the filesystem hierarchy standard. Also addressed are applications, shells, scripting and data management; user interfaces and desktops; administrative tasks; essential system services; networking fundamentals; and security, as well as support issues for open source software. Multiple distributions are covered with emphasis on the two leading major distribution forks.

Prerequisites: None.

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will demonstrate an understanding of installation, configuration, and administration of industry standard opensource operating systems. They will be able to troubleshoot and resolve Linux installation and common systems issues. They will be able to use and administer Linux as both a server and a desktop operating system.

Course Objectives: At the conclusion of this course, each successful student will able to:
- Describe the GPL, GNU, and history of the Linux operating system
- Install different Linux distributions with custom partitioning
- Navigate the graphical interface of the Linux operating system
- Navigate the filesystem using the command line
- Interact with the Linux shell
- Utilize key Linux utilities
- Install software for use with the Linux operating system
- Administer a Linux system
- Utilize networking service and how to troubleshoot issues
- Utilize SSH for remote administration
- Create customer host firewall rules
- Configure an Apache web server
- Create shell scripts for use with automation
**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

Topic 01  Introduction to Open Source Software
Topic 02  Installing Linux
Topic 03  Using Fedora and the Shell
Topic 04  Linux Filesystem
Topic 05  Bourne Again Shell (BASH)
Topic 06  Linux Utilities
Topic 07  Midterm Exam
Topic 08  Installing Software
Topic 09  System Administration
Topic 10  Linux Networking
Topic 11  OpenSSH & Host Firewall
Topic 12  Apache Webserver
Topic 13  BASH Scripting
Topic 14  Final Exam Review
Topic 15  Final Examination
Syllabus

ITMO 456 Introduction to Open Source Operating Systems
3 credit hours / 45 contact hours

Instructor: Ray Trygstad


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students learn to set up and configure an industry-standard open source operating system, including system installation, and basic system administration; system architecture; package management; command–line commands; devices, filesystems, and the filesystem hierarchy standard. Also addressed are applications, shells, scripting and data management; user interfaces and desktops; administrative tasks; essential system services; networking fundamentals; and security, as well as support issues for open source software. Multiple distributions are covered with emphasis on the two leading major distribution forks.

Prerequisites: None.

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will be able to demonstrate foundation knowledge of the Linux operating system and will be familiar with knowledge required to pass the Linux+ certification exams from CompTIA. The course will be taught to the current Linux+ objectives (Exams LX0-103 and LX0-104) which are the same as the Linux Professional Institute LPIC-1 level. Exam objectives that are covered in other courses in the ITM curriculum, such as ITMD 440 will not be covered in this course. While this course is taught to published exam standards, it is not an exam preparation course and there is no guarantee or expectation that students completing the course will be able to pass the Linux+/LPIC-1 exams.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe the origins of and explain the philosophy of Open Source Software
- Install, configure and administer an industry-standard distribution of the Linux operating system.
- Troubleshoot and resolve Linux installation problems and common system problems.
- Use and administer Linux as both a server and desktop operating system.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Introduction to Linux</td>
</tr>
<tr>
<td>02</td>
<td>Linux Installation and Usage</td>
</tr>
<tr>
<td>03</td>
<td>The Linux Filesystems</td>
</tr>
<tr>
<td>04</td>
<td>Managing Filesystems</td>
</tr>
<tr>
<td>05</td>
<td>Administering Filesystems</td>
</tr>
<tr>
<td>06</td>
<td>Linux Server Deployment</td>
</tr>
<tr>
<td>07</td>
<td>Linux Command Line: the BASH Shell</td>
</tr>
<tr>
<td>08</td>
<td>System Initialization and X Windows</td>
</tr>
<tr>
<td>09</td>
<td>Managing Linux Services and Processes</td>
</tr>
<tr>
<td>10</td>
<td>Linux System Administration: root</td>
</tr>
<tr>
<td>11</td>
<td>Software Installation and System Backup</td>
</tr>
<tr>
<td>12</td>
<td>Networking Linux</td>
</tr>
<tr>
<td>13</td>
<td>Configuring &amp; Using Network Services</td>
</tr>
<tr>
<td>14</td>
<td>Linux Troubleshooting &amp; Security</td>
</tr>
<tr>
<td>15</td>
<td>Linux, Virtualization, and the Cloud</td>
</tr>
</tbody>
</table>
Syllabus

ITMS 428 Database Security
3 credit hours / 45 contact hours

Instructor: TBD

ISBN: 978-1435453906

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Students will engage in an in-depth examination of topics in data security including security considerations in applications and systems development, encryption methods, cryptography law and security architecture and models. Prerequisite: ITMD 421
This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each student will learn the fundamentals of database security as well as concepts and technologies such as encapsulation (information hiding) and using relational database security management techniques. They will be conversant with database hardening on a variety of platforms, defense against the most common threats and attacks, and the legal and regulatory environment impacting database security.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Recall and describe concepts of information security
- Describe and explain security architectures for protection of database resources
- Secure and harden database deployments using leading industry-standard database management systems
- Recall and describe access control approaches, including authentication, authorization, privileges and roles
- Discuss cryptography and encryption
  - Identify elements of a cryptographic system
  - Describe how crypto can be used, strengths and weaknesses, modes, and issues that have to be addressed in an implementation
- Describe the technical details of SQL injection attacks
- Explain how to protect against SQL injection attacks
- Discuss issues and recall techniques and best practices in the protection of Big Data and data in the cloud
- Recall and describe legal and regulatory compliance issues in database protection
- Describe and discuss the processes of auditing and testing database security

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

Topics to be covered:

Topic 01 Introduction: Security and Information Technology
Topic 02 Database Review
Topic 03 Database Hardening: MySQL
Topic 04 Database Hardening: SQL Server
Topic 05 Database Hardening: Oracle
Topic 06 Passwords, Profiles, Privileges, and Roles
Topic 07 Encryption
Topic 08 SQL Injection I: Identification
Topic 09 SQL Injection II: Exploitation and Defense
Topic 10 Securing Big Data
Topic 11 Cloud-based security
Topic 12 Regulations and Compliance
Topic 13 Database Security Auditing
Topic 14 Database Security Testing
**Syllabus**

**ITMS 443 Vulnerability Analysis and Control**  
3 credit hours / 45 contact hours

**Instructor:** Kevin Vaccaro


Other supplemental material may be found on the course web site at [http://blackboard.iit.edu](http://blackboard.iit.edu)

**Course Description:** This course addresses hands-on ethical hacking, penetration testing, and detection of malicious probes and their prevention. It provides students with in-depth theoretical and practical knowledge of the vulnerabilities of networks of computers including the networks themselves, operating systems, and important applications. Integrated with the lectures are laboratories focusing on the use of open source and freeware tools; students will learn in a closed environment to probe, penetrate, and hack other network. It is recommended, but not required, that students also take ITMS 448 prior to or in parallel with this course. **Prerequisite:** None.

This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** Each student will be able to explain the professional hacker’s methodology for attacking a network and differentiate between different methods of attacks and countermeasures.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Explain the professional hacker’s methodology for attacking a network.
- Explain the script kiddie’s methodology for attacking network.
- Explain Network Security vulnerabilities.
- Explain Hackers, hacker techniques, tools and methodologies
- Describe hacker motivation, perform network reconnaissance and network scanning methods
- Describe and perform covering tracks after gaining access to a network.
- Describe the general symptoms of a virus attack
- Define and describe the two basic approaches to antivirus software.
- Describe how to defend against a worm and virus attack.
- Describe the steps in planning for a computer incident.
- Identify the difficulty is establishing who has jurisdiction over a computer crime.
- Understand the legal issues with regard to preserving digital evidence.
- Identify and describe the incident response goals and priorities.
- Describe the factors involved in identifying a computer incident.
- Describe and use the various tools associated with identifying an intruder.
- Describe how to handle and evaluate a computer incident.
- Recognize the role of law enforcement and rule of particularity in executing a search warrant.
- Describe the role the network security specialist would play in assisting the law enforcement and prosecution effort.
- Describe the difficulties in prosecuting a computer crime incident.
Differentiate between competitive intelligence, economic intelligence, and industrial espionage.

Differentiate between information, data, knowledge and intelligence.

Specify the advantages of intelligence in industrial espionage.

Describe the various factors that make up the intelligence lifecycle.

Describe the foreign intelligence organizations interested in economic intelligence and their general methodology.

Describe operational, personnel, physical and technical countermeasure factors.

Describe the history of warfare and its relationship to information warfare.

Explain the concerns of the US. Government with regard to the information

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01 Introduction / Ethics of Hacking and Cracking
- Topic 02 Reconnaissance
- Topic 03 Scanning Tools
- Topic 04 Sniffers
- Topic 05 TCP/IP Vulnerabilities
- Topic 06 Encryption and Password Cracking
- Topic 07 Spoofing
- Topic 08 Session Hijacking
- Topic 09 Hacking Network Devices
- Topic 10 Trojan Horses /Malware
- Topic 11 Denial of Service Attacks
- Topic 12 Buffer Overflows/Programming Exploits
- Topic 13 Web Application Vulnerabilities
- Topic 14 Windows Vulnerabilities
- Topic 15 Unix/Linux Vulnerabilities
- Topic 16 Final Examination
Syllabus

ITMS 448 Cyber Security Technologies
3 credit hours / 52 contact hours

Instructor: Shawn Davis


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: Prepares students for a role as a network security administrator and analyst. Topics include viruses, worms, other attack mechanisms, vulnerabilities and countermeasures, network security protocols, encryption, identity and authentication, scanning, firewalls, security tools, and organizations addressing security. A component of this course is a self-contained team project that, if the student wishes, can be extended into a fully operational security system in a subsequent course. Prerequisites: ITMO 440

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will gain an in-depth understanding of various important network and computer security concepts and practices. Additionally, each student will become an expert in the specific facet of security associated with her/her team project. Students, through their course exams and team project presentations, will demonstrate the ability to apply information assurance and security concepts, specifically on the topics of malware analysis, attack vectors, mitigation/deterrents, cryptography, Steganography basics, firewalls, IDS/IPS, internet security protocols, authentication, and wireless network security.

Course Objectives: At the conclusion of this course, each successful student will be able to:

- Discuss general information security concepts and core principles as well as identify common insider and outsider threats.
- Describe common types of malware and web exploit kits as well as identify common signatures and remediation techniques.
- Create an isolated environment for performing malware analysis using static and dynamic techniques.
- Discuss and identify common attack vector types and methods.
- Identify and explain the Open Web Application Security Project (OWASP) top ten critical web application security vulnerabilities as well as associated attack methods.
- Describe how public and private key cryptography can be used to achieve confidentiality, integrity, authentication, and non-repudiation.
- Discuss and demonstrate hiding covert information in common types of carrier files using various steganographic methods and tools.
- Describe and demonstrate components of host and network based intrusion detection and prevention systems using the SecurityOnion Linux distribution..
- Demonstrate firewall rule creation and discuss the usage and proper placement of stateless and stateful packet inspection filters, and proxy servers for securing networks.
- Describe wireless security components, architecture, security protocols, common threats, and attack types as well as demonstrate common attack scenarios.
• Discuss common methods for user and network authentication and demonstrate how an attacker can utilize John the Ripper to crack various types of password hashes.
• Discuss and demonstrate expertise in a particular area of information security following the outcome of their semester long security project.

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
(d) An ability to function effectively on teams to accomplish a common goal.
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities.
(f) An ability to communicate effectively with a range of audiences.
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(m) An understanding of best practices and standards and their application.
(n) An ability to assist in the creation of an effective project plan.

**Topics to be covered:**

Topic 01 Information Security Overview
Topic 02 Malware and Exploit Kit Overview
Topic 03 Malware Analysis
Topic 04 Attack Vectors & Mitigation Techniques
Topic 05 Attack Vectors II & Mitigation Techniques
Topic 06 Private Key Cryptography
Topic 07 Public Key Cryptography, Midterm Review
Topic 08 Midterm Examination
Topic 09 Steganography
Topic 10 Intrusion Detection & Prevention Systems
Topic 11 Firewalls
Topic 12 Wireless Network Security & Attacks
Topic 13 User and Network Authentication
Topic 14 Final Presentations & Demonstrations of Projects
Topic 15 Final Examination
Syllabus

ITMD 458 Operating System Security
3 credit hours / 45 contact hours

Instructor: Sean Hughes-Durkin

Textbook: No formal textbook. Course material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course will address theoretical concepts of operating system security, security architectures of current operating systems, and details of security implementation using best practices to configure operating systems to industry security standards. Server configuration, system-level firewalls, file system security, logging, anti-virus and anti-spyware measures and other operating system security strategies will be examined. Prerequisites: ITMO 456

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will be able to describe the different types of malicious threats targeted to an operating system. The student will be able to explain ways to mitigate these threats, correct vulnerable configurations, and use best practices to harden systems. This course and the concepts described in the class cover topics included on the Certified Information Systems Security Professional (CISSP). The GIAC Security Essentials (GSEC) certification is another recognized security certification that covers the concepts the student will learn throughout this course.

Course Objectives: At the conclusion of this course, each successful student will able to:

Discuss basic concepts of system security
Discuss different malicious software and attacks
Understanding the different types of attacks and software for use in protecting system security
Explain ways to authenticate users and control their access
Understand how to use different cryptographic tools to secure a system
Implement host based intrusion detection and host based firewalls
Explain different ways to secure operating systems
Understand how to harden Linux and Windows systems
How to implement secure communication
Post system hardening testing and analysis

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01  Overview of Security
- Topic 02  Malicious Software
- Topic 03  Malicious Attacks
- Topic 04  User Authentication & Access Control
- Topic 05  Cryptographic Tools
- Topic 06  Host Based Intrusion Detection – Part 1
- Topic 07  Host Based Intrusion Detection – Part 2
- Topic 08  Midterm Exam
- Topic 09  System Firewalls
- Topic 10  OS agnostic hardening
- Topic 11  Linux Hardening
- Topic 12  Windows Hardening
- Topic 13  Secure Communication
- Topic 14  Post OS Hardening Testing
- Topic 15  Final Exam Review
- Topic 16  Final Examination
Syllabus

ITMS 478 Cyber Security Management
3 credit hours / 45 contact hours

Instructor: William Slater


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: In-depth examination of topics in the management of information technology security including access control systems & methodology, business continuity & disaster recovery planning, legal issues in information system security, ethics, computer operations security, physical security and security architecture & models using current standards and models. Students will be required to complete a research paper. Prerequisites: None. This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate foundation knowledge and application of information system (IS) security concepts as they to apply the management of IS security in a large organizational environment. Students will be able to develop controls used to enforce confidentiality, integrity and availability. Students will describe and identify policy frameworks, legal and moral implications, and best practices in information security management.

Course Objectives: At the conclusion of this course, each successful student will able to:
- Identify categorizations of information assets using risk assessment and risk analysis tools.
- Identify vulnerabilities and threats associated with information assets.
- Define threats based on computer and systems architectures.
- Implement policies, standards, procedures and guidelines to ensure the confidentiality, integrity and availability of assets.
- Incorporate security and contingency planning.
- Develop a Security Awareness Program
- Develop a Security Program utilizing standard security management models and practices.
- Develop controls used to enforce confidentiality, integrity and availability.
- Identify legal and ethical issues associated with the management of information assets.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

- Topic 01 Introduction to Management of Information Security
- Topic 02 Planning for Security
- Topic 03 Planning for Contingencies
- Topic 04 Information Security Policy
- Topic 05 Developing the Security Program
- Topic 06 Security Management Models
- Topic 07 Security Management Practices
- Topic 08 Risk Management: Identifying and Assessing Risk
- Topic 09 Risk Management: Controlling Risk
- Topic 10 Protection Mechanisms
- Topic 11 Personnel and Security
- Topic 12 Law and Ethics
- Topic 13 Managing Security Projects
- Topic 14 Designing and Implementing Security Awareness
- Topic 15 Designing and Implementing a Security Program
Syllabus

ITMS 478 Cyber Security Management
3 credit hours / 45 contact hours

Instructor: Ray Trygstad


Other supplemental material may be found on the course website at http://blackboard.iit.edu

Course Description: In-depth examination of topics in the management of information technology security including access control systems & methodology, business continuity & disaster recovery planning, legal issues in information system security, ethics, computer operations security, physical security and security architecture & models using current standards and models. Students will be required to complete a research paper. Prerequisites: None. This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate foundation knowledge and application of information system (IS) security concepts as they apply the management of IS security in a large organizational environment. Students will describe and identify policy frameworks, legal and moral implications, and best practices in information security management. Students will be able to conduct a security audit of an organization and report on the results with appropriate suggestions for amelioration of problem areas identified.

Course Objectives: At the conclusion of this course, each successful student will be able to:

- Explain what cyber security is and discuss the history of computer & information security
- Identify, list, and define key terms and critical concepts of the Information Assurance/Cyber Defense discipline
- Recall the principal components of cyber security system implementation planning
- Describe the threats posed to security and discuss common attacks
- Explain the need for contingency planning and describe the major components
- Define information security policy and explain its central role in a successful information security program
- Define risk management and its role in the organization
- Use risk management to identify and prioritize risk factors for information assets
- Assess risk based on the likelihood of occurrence and impact on an organization
- Identify risk control classification categories and evaluate risk controls
- Explain what an information security audit is, and the relationship of information security policies to the audit process
- Describe how an information security audit is conducted
- List and describe functional components of the information security program
- Determine how to plan and staff an organization’s information security program
- Explain how to develop a security program, identifying goals, objectives and metrics
- Select and customize an information security management model to meet the needs of a particular organization
- List and implement the elements of key information security management practices
• Discuss emerging trends in the certification and accreditation of U.S. federal IT systems
• Describe cyber defense tools, methods and components
• Describe how fundamental concepts of cyber defense can provide system security
• Identify skills and requirements for information security positions
• Explain the role of information security in hiring, training, evaluations, and terminations
• Identify major national and international laws that relate to the practice of cyber security and cyber defense
• Describe the ethical foundations and approaches that underlie ethics in cyber security
• Describe the impact of legal/regulatory standards on a given system
• Conduct audits to determine compliance with laws.

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(m) An understanding of best practices and standards and their application.

**Topics to be covered:**

Topic 01 Introduction to Information Security
Topic 02 Planning for Security
Topic 03 Security Policy
Topic 04 Risk Management I
Topic 05 Risk Management II
Topic 06 The Information Security Audit
Topic 07 Disaster Recovery & Business Continuity
Topic 08 Developing Security Programs
Topic 09 Security Management Models
Topic 10 Security Management Practices
Topic 11 Protection Mechanisms
Topic 12 Personnel and Security
Topic 13 Legal, Ethical & Professional Issues
Topic 14 HIPAA - Privacy & Security in Heath Care
Topic 15 IS Audit Class Presentations
Syllabus

ITMD 479 Topics in Information Security
Variable but normally 3 credit hours / 45 contact hours

Instructor: As assigned.

Textbook: Selected by the instructor as appropriate for the topic covered in the course.

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course will cover a particular topic in Information Security, varying from semester to semester, in which there is particular student or staff interest. This course may be taken more than once but only 9 hours of ITMS 479/579 credit may be applied to a degree.

Prerequisites: Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate knowledge of an information security topic as defined by the selected topic for the term.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topic covered in the course

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs may be met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(m) An understanding of best practices and standards and their application.

Topics to be covered: Topics will be defined by the instructor for the topic covered in the course.
Syllabus

ITMS 484 Governance, Risk and Compliance
3 credit hours / 45 contact hours

Instructor: Bonnie A. Goins

Textbook: None. Publicly available deliverables on the topic are used for the course.

Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: In-depth examination of topics in governance, risk and compliance, including Information Assurance policies, standards and compliance, as well as the examination of security risk analysis and the performance of systems certification and accreditation. Homework and a paper are required for this course. Prerequisites: None. This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate foundation knowledge of governance, risk and compliance (GRC) concepts as they apply to legal, regulatory and standards-based environments, such as HIPAA, FISMA, NERC, PCI DSS, GLBA, SOX, FERPA, COPPA and others. Students will describe and identify policy frameworks, legal and compliance implications, and best practices.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Describe how risk relates to a system security policy.
- Students will be able to describe various risk analysis methodologies.
- Students will be able to evaluate and categorize risk 1) with respect to technology; 2) with respect to individuals, and 3) in the enterprise, and recommend appropriate responses.
- Students will be able to compare the advantages and disadvantages of various risk assessment methodologies.
- Students will be able to select the optimal methodology based on needs, advantages and disadvantages.
- Students will be able to describe the impact of legal/regulatory standards on a given system.
- Students will be able to describe how standards, such as the Orange Book, may be applied to the requirements for a sub-contractor or customer.
- Students shall be able to describe what the laws mandate and where they apply.
- Students will be able to conduct audits to determine compliance with laws.
- Students will be able to list the applicable laws and policies related to cyber defense and describe the major components of each pertaining to the storage and transmission of data.
- Students will be able to describe their responsibilities related to the handling of information about vulnerabilities.
- Students will be able to describe how the type of legal dispute (civil, criminal, private) affects the evidence used to resolve it.
- Students will be able to describe the DoD system certification and accreditation processes.
- Students will be able to define certification and accreditation and identify/discuss concepts.
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

Topics to be covered:

- Topic 01  Introduction to Risk Analysis
- Topic 02  Risk Assessment/Analysis Methods
- Topic 03  Risk Management Models and Processes
- Topic 04  Risk Measurement, Evaluation and Communication
- Topic 05  Risk Treatment Methods & Economics
- Topic 06  Information Assurance
- Topic 07  Legal, Regulatory and Standards Compliance
- Topic 08  Policies, Laws, Regulation and Ethics
- Topic 09  Conducting Audits, Assessments and Certification/Accreditation
- Topic 15  Final Project Presentations / Final Exam Review
- Topic 16  Final Examination
Syllabus

ITMT 430 Systems Integration
3 credit hours / 45 contact hours

Instructor: Jeremy Hajek / Ray Trygstad

Textbooks:
Cox, Iain R. Enterprise Architecture: How to get EA optimized, Iain R. Cox
November 15, 2014; ASIN: B00PPI7104


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: In this capstone course, students will identify, gather, analyze, and write requirements based on user needs and will then design, construct, integrate, and implement an information system as a solution to a business problem. Students will document integration requirements using business process models and will learn and apply key systems integration architecture, methodologies, and technologies using industry best practices. User needs and user centered design will be applied in the selection, creation, evaluation, and administration of the resulting system. The system design process will take into account professional, ethical, legal, security, and social issues and responsibilities and stress the local and global impact of computing on individuals, organizations, and society. Discussion will also cover the need to engage in continuing professional development.

Prerequisites: ITMD 411, ITMD 421, ITMD 361, ITMD 362, ITMM 471, ITMO 440, and ITMO 456.

This is a required course in the Bachelor of Information Technology and Management degree.

Course Outcome: Students completing this course will be able to:
- Integrate hardware and software into a complete information system to meet identified user needs as a solution to a defined business problem.
- Demonstrate professionalism, ethics, and an understanding of legal, security, and social issues and responsibilities in information systems.

Course Objectives: At the conclusion of this course, each successful student will able to:
- Identify, gather, analyze, and write information system requirements based on user needs.
- Document integration requirements using business process models.
- Design, construct, integrate, and implement an information system as a solution to a business problem.
- Apply key systems integration architecture, methodologies, and technologies in the construction of an information system using industry best practices.
- Based on identified user needs, demonstrate the use of user centered design in the selection, creation, evaluation, and administration of an information system.
- Recall and explain professional, ethical, legal, security, and social issues and responsibilities in information systems.
- Describe the local and global impact of computing on individuals, organizations, and society.
- Describe the need to engage in continuing professional development and explain how this may be achieved.
ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
(l) An ability to effectively integrate IT-based solutions into the user environment.
(m) An understanding of best practices and standards and their application.
(n) An ability to assist in the creation of an effective project plan.

Topics to be covered:

Topic 01 The systems integration process
Topic 02 Business process modeling and analysis
Topic 03 User-centered design considerations
Topic 04 Information gathering and collection
Topic 05 Creating system requirements
Topic 06 Systems integration: architecture, methodologies, and technologies
Topic 07 Software and application selection
Topic 08 Hardware selection
Topic 09 System construction and network integration
Topic 10 Software deployment and integration
Topic 11 Security models, integration, and lifecycle
Topic 12 Professional, ethical, legal, and social issues and responsibilities
Topic 13 Local and global impact of computing
Topic 14 Personal professional development and growth
Topic 15 Project presentation
Syllabus

ITMT 491 Undergraduate Research
Variable 1 to 6 credit hours

Instructor: As assigned. Full-time faculty may schedule students for ITMT 491 as the faculty member’s schedule allows. Adjunct faculty are under no obligation to conduct undergraduate research with students as they receive no additional compensation for this, so their participation is entirely voluntary.

Textbook: Selected by the instructor and student as appropriate for topics covered in the course.

Course Description: Undergraduate research. Written consent of instructor is required.

Prerequisites: Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student in this independent study course will demonstrate knowledge as defined by the selected topics for the term.

Course Objectives: At the conclusion of this course, each successful student will:

• present a project or research results in a formal presentation;
• produce a paper suitable for publication.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

Topics to be covered: Topics for the course will be defined by the instructor and student.
Registration is by permit only; students must prepare and submit a written research prospectus, proposal, or abstract of material to be studied to the faculty member before they issue a permit to register. The faculty member will work with the student as necessary to refine the prospectus, proposal, or abstract to their mutual satisfaction. The prospectus, proposal, or abstract will define the topics to be covered in the course.
Syllabus

ITMT 492 Embedded Systems and Reconfigurable Device Logic
3 credit hours / 60 contact hours

Instructor: Jeremy Hajek


Other supplemental material may be found on the course web site at http://blackboard.iit.edu

Course Description: This course covers reconfigurable intelligent devices programmed with modern high level languages and integration into modern environments. This course also covers the issue of deployment of wireless sensor networks and the use of rapid prototyping for commercial application. Students will discover hardware, software, and firmware design trade-offs as well as best-practices in current embedded systems development. A final project will integrate course concepts in a system using an embeddable single board microcontroller. Prerequisites: ITM 311 or ITM 312

This is a selected elective in the Bachelor of Information Technology and Management degree.

Course Outcome: Each successful student will demonstrate a proficiency in using a VOM meter to measure power values. Each student will produce a report on electronic components. Each student will complete and embedded systems circuit design project and present the working prototype of the device. The final course project is an embedded systems project that incorporates your ability to apply the concepts outlined in the objectives and final rubric.

Course Objectives: At the conclusion of this course, each successful student will able to:

- Explain and implement basic electronic components and electrical diagrams
- Be able to properly implement these parts
- Understand the difference between a computer and a microcontroller
- Implement intelligence and decision constructs to give digital and analog sensors intelligence
- Understand the nature if processor timing and code execution on the microcomputer scale.
- Understand the nature of radio waves and communication
- Understand battery drain and usage while operating a microcontroller
- Be able to implement wireless networks (Mesh and P2P)
- Be able to use diagraming tools and draw schematics of their project design.

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(d) An ability to function effectively on teams to accomplish a common goal
(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(m) An understanding of best practices and standards and their application.
(n) An ability to assist in the creation of an effective project plan.

Topics to be covered:

- Topic 01 Principles of Electricity and Electronics
- Topic 02 Components and Semiconductor
- Topic 03 Passive and Active Components
- Topic 04 Circuit assembly
- Topic 05 Electronics Quiz
- Topic 06 Getting Started with Arduino Microcontrollers
- Topic 07 Introduction to sensor components
- Topic 08 Introduction to control structures
- Topic 09 Introduction to environmental monitoring
- Topic 10 Introduction to Networking in microcontrollers
- Topic 11 Introduction to Wireless Networking
- Topic 12 Mesh Networks and P2P
- Topic 13 Introduction to wearable computing
- Topic 14 Introduction to batteries and solar power
- Topic 15 Final Project Presentations
- Topic 16 Final Examination
Syllabus

**ITMT 495 Topics in Information Technology**
Variable but normally 3 credit hours / 45 contact hours

**Instructor:** As assigned. Course coordinator is Ray Trygstad.

**Textbook:** Selected by the instructor as appropriate for the topic covered in the course.
Other supplemental material may be found on the course web site at http://blackboard.iit.edu

**Course Description:** This course will cover a particular topic, varying from semester to semester, in which there is particular student or staff interest.

**Prerequisites:** Defined by the department or by the instructor teaching the course
This is a selected elective in the Bachelor of Information Technology and Management degree.

**Course Outcome:** Each successful student will demonstrate knowledge of subject matter as defined by the selected topic for the term.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topic covered in the course

**ABET Criterion 3 Outcomes:** While specific outcomes must be mapped for each offering of the course, the following ABET Criterion 3 outcomes for Accrediting Information Technology Programs may be met all or in part by this course:

  (a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
  
  (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
  
  (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
  
  (i) An ability to use current techniques, skills, and tools necessary for computing practice.
  
  (j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
  
  (k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
  
  (l) An ability to effectively integrate IT-based solutions into the user environment.
  
  (m) An understanding of best practices and standards and their application.

**Topics to be covered:** Topics will be defined by the instructor for the topic covered in the course.
Syllabus

TECH 465 Introduction to Social Commerce
3 credit hours / 45 contact hours

Instructor: Bruce A. Mueller

Textbook: None. Excerpts from books, web sites, articles and class lecture notes will be used. Other supplemental materials and tools as well as introduction to mobile software/technology; developing an application; data base; data mining, analysis and reporting. Other supplemental material may be found on the course web site at http://blackboard.iit.edu.

Course Description: Provides the student with an introduction and basic knowledge of social commerce to help the student develop a practical understanding of the design, construction, market readiness and synergistic integration of a business mobile application used in social commerce. The course will provide a practitioner focus that will benefit the student in a start-up or company/corporate setting. Prerequisites: None
This is a selected elective in the Bachelor of Information Technology and Management degree and is available as an elective for students in other degrees.

Course Outcomes: Each successful students will demonstrate an understanding of the basic concepts of: social commerce, mobile applications, algorithms, data analytics, market research, customer identification and evaluation, reward techniques and how to win in business; and will demonstrate an ability to work in a team to produce and communicate a social commerce application that can win the marketplace.

Course Objectives: At the conclusion of this course, each student will be able to:

- Understand and articulate the basic concepts of social commerce
- Comprehend the definition and structure of social commerce
- Design a social commerce mobile application that meets customer needs
- Understand technology factors of data bases and all aspects of a mobile application
- Know, develop and apply basic market focused and reward algorithms
- Recognize and perform basic data analytics and data mining from data bases
- Create the integration of partner and customer applications, systems and rewards
- As part of a team, design, develop and prepare a written report and presentation for an actual social commerce mobile application and business model
- Realize what it takes to win in the marketplace with a social commerce application

ABET Criterion 3 Outcomes: The following ABET Criterion 3 outcomes for Accrediting Computing Programs are met all or in part by this course:

(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

Topics to be covered:

Topic 01 Introduction to definition, structure, scope and needs of business

Topic 02 Components of Social Commerce: needs, configuration and design

Topic 03 Customer needs research and analysis

Topic 04 Customer factors and ideation

Topic 05 Competitive Advantage including competition research

Topic 06 Market Research: Proof of Idea and Market for Idea

Topic 07 Final design of Idea (project)-Lean Canvas

Topic 08 Algorithms: basic design, customer experiences, partner experiences and rewards

Topic 09 Data Analytics

Topic 10 Data Mining: design, development, integration and synergies

Topic 11 System requirements for data bases, files and structure

Topic 12 Mobile application: design, data handling, transactions, transmission, security, order process, payment, data base design and uses, testing, integration with other applications and systems

Topic 13 Business model, plan and project plan for a successful social commerce application

Topic 14 Team project on the design, development, testing, implementation, roll-out, pricing, distribution and feedback on a social commerce mobile application

Topic 15 Final team presentation of project to actual “shark” judges for opportunity of investment

Topic 16 Ten case studies on identified companies which reviews the company’s mobile customer applications, strengths and weaknesses, ways to incorporate social commerce improvements and the impact of the new solution on company’s employees, legal, financials, competition and customers
**Syllabus**

**TECH 497 Special Projects**
Variable 1 to 6 credit hours

**Instructor:** As assigned. Course coordinator is Ray Trygstad.

When taught as independent study, full-time faculty may schedule students for TECH 497 as the faculty member’s schedule allows. Adjunct faculty are under no obligation to conduct independent study with students as they receive no additional compensation for this, so their participation is entirely voluntary.

**Textbook:** Selected by the instructor or instructor and student as appropriate for topics covered in the course.

**Course Description:** Independent study and projects in applied technology that are multi/cross-disciplinary not tied to a specific department.

**Prerequisites:** Defined by the department or by instructor teaching the course

This is a selected elective in the Bachelor of Information Technology and Management degree and is available as an elective for students in other degrees.

**Course Outcome:** Each successful student in this independent study or project course will demonstrate knowledge as defined by the selected topics for the term.

**Course Objectives:** At the conclusion of this course, each successful student will able to:

- Meet objectives defined by the instructor for the topics covered in the course

**ABET Criterion 3 Outcomes:** The following ABET Criterion 3 outcomes for Accrediting Information Technology Programs are met all or in part by this course:

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice.

(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

**Topics to be covered:** When offered as a projects course, topics will be defined by the instructor for the topic covered in the course.

When taken as independent study, topics for the course will be defined by the instructor and student. Registration is by permit only; students must prepare and submit a written research prospectus, proposal, or abstract of material to be studied to the faculty member before they issue a permit to register. The faculty member will work with the student as necessary to refine the prospectus, proposal, or abstract to their mutual satisfaction. The prospectus, proposal, or abstract will define the topics to be covered in the course.
Appendix B – Faculty Vitae

On pages following.
Faculty Vitae of Omar M. Aldawud

Education
Ph.D. in Computer Science (GPA 4.0), Illinois Institute of Technology, December 2002.
Master of Science in Computer Science with Honors (GPA 4.0), Northeastern University, May 1994.
Bachelor of Science in Computer Science, University of Jordan, May 1988.

Academic Experience
Adjunct Professor of Computer Science, Illinois Institute of Technology; 2002- Present (Chicago, IL)
Development and teaching of the following classes at the Computer Science department:

- Database Organization CS425
- Advanced Database Organization CS525
- Object Oriented Design Patterns CSP585
- Software Engineering CS487
- Object Oriented Design and Programming CS445

Adjunct Assistant Professor of Information Technology and Management,
School of Applied Technology, Illinois Institute of Technology; 2013- Present (Chicago, IL)
Development and teaching of the following classes at the School of Applied Technology (ITM):

- Data Analytics (ITMD 527)
- Service Oriented Architecture (ITM566)
- Advanced Database Organization using Oracle 11G (ITM422)
- An Accelerated Introduction to Object Oriented Programming with Java (ITM311)
- Database System: Fundamentals & More with MS Access
- Introduction to Programming with C++ (ITM312)

Non-Academic Experience
Alcatel-Lucent; 1996 to May 2012 (Chicago, IL)

- Alcatel-Lucent Linux Control Platform Product Manager; November 2006 – March 2012
  Product manager for the Alcatel-Lucent common platform solution architecture to support a
  company-wide initiative to ensure that all Alcatel-Lucent products (IMS, 3G, GSM, LTE, SCG)
  were built on the same hardware and software platforms.

UMTS 3G Release Planner; June 2004 – November 2007
Executed the Release Planning / Estimation and Commitment process for the defined feature set
associated with Alcatel-Lucent 3G MSC, IMS and other applications based on customer needs.
To assist in these tasks, using VB, MS-Access, and Active Server Pages (ASP), developed and
maintained a feature-tracking database. The feature-tracking database is now widely used by
multiple Lucent organizations via the intranet and was awarded the Lucent Excellence Award.

UMTC Software Architect; January 2004 – June 2004
Duties include setting the architecture for Lucent Softswitch (LSS) based products including 3rd
Generation Switching Center (3g-MSC), that meets the required capacity and performance
objectives of the overall Mobil Switching Center as set by the 3GPP standards and our
customers. Main technologies/protocols worked or is working on: VoIP, SS7 Signaling, ATM
(AAL2, AAL5), IuCS, ISUP, BICC and SIP.
**UMTS System Engineer; December 1999 to January 2004**
Lead System Engineer for 3rd Generation Mobil Switching Center (3G-MSC). Duties include writing specification documents for Lucent MSC components including the Lucent Softswitch.

**Lead Software Developer / Environment Engineer; October 1996 to December 1999**
Led team to provide more robust environments for development and testing for all 5ESS customer deliveries, including providing loads, bring ups, retrofit trials and work database and tools issues. Set direction and advised team. Team received the Lucent Employee Excellence Achievement Award.

**Electronic Data Systems; July 1995 – October 1996**
*Systems Engineer.* Developed and maintained programs and requirements for the Department of Defense. Using CICS COBOL, MS-Access, Oracle, and C language developed and supported a system used by more than 150 employees.

**Entrepreneurship**
- Founder and CEO of Hostitwise.com, a web development and web hosting company. Define and manage technological direction for advanced web development and support firm. Lead all aspects of technology development to pursue growth and strategic objectives. Oversee research and development; train development, sales and leadership teams, supervise web application development projects; generate new products and facilitate their entry to market. Consistently exceed client expectations.
- Co-founder Bidobee.com an online software platform for connecting consumers with service providers.

**Relevant Community Projects and Volunteerism**
- Volunteer soccer coach at Naperville Park district and Wheatland Athletic Association.
- Collaborated with the IIT Center for Professional Development to assist international students in their transition to both the school and life in the United States.
- Lead of the design and development team of “204thekids,” an online initiative in support of school district 204 expansions.
Faculty Vitae of Adarsh Arora

Education
B.S. University of Lucknow, India, 1972
M.S. in Computer Science, Northwestern University, 1975
Ph.D. in Computer Science, Northwestern University 1977

Academic experience
Illinois Institute of Technology
Ranks
Industry Professor of Information Technology and Management, 2014-Present, Part Time
Assistant Professor of Computer Science, 1982-1984, Full-time

Kellogg School of Management and the University of Chicago’s Graduate School of Business
Frequent speaker for entrepreneurial events

Non-academic experience
Reputada
Founder and CEO. Reputada provides free tools enabling professionals and businesses to accumulate and showcase reputation capital earned from customers, colleagues and partners. 2014-Present, Full-time

Lisle Technology Partners
Founder and CEO. LisleTech builds technologies for start-ups and takes equity in some of them. LisleTech is funded by various well-known Valley and Los Angeles based entrepreneurs. 1999-Present, Full-time

Athena Security
Founder and CEO. Athena was a company in the Network Security Space and was acquired by Solarwinds (NYSE:SWI) in 2012. Athena was funded by Lisle Technology Partners. 2017-2012, Full-time.

Peritus Software Services
Founder and CTO. Funded by Greylock and Matrix, Peritus was a leading company in the Y2K space and its IPO in 1997 was the most oversubscribed stock on NASDAQ that year. Peritus was sold to Rocket Software in 2002. 1996-1999, Full-time.

Vista Technology
Founder and President. Vista built software to help chip design. Its VHDL and Verilog products were sold through OEM arrangements with leading design automation companies. Vista obtained multi million dollar funding from the Department of Defense including multiple SBIR awards. 1987-1995, Full-time.

Bell Labs
Member of the Technical Staff. Focused on designing relational database schemas to support the development of electronic switching systems. 1978–1982 Full-time

Current membership in professional organizations
Association for Computing Machinery

Honors and awards
2004 Chicago Software Association’s Annual City Lights Award.
Service activities

Illinois Institute of Technology

Boards of Visitors, IIT School of Applied Technology

Industry/Community

Board of the Farley Center for Entrepreneurship and Innovation at the McCormick School of Engineering and Applied Science of Northwestern University.
CEO Mentor at the Junto Institute for Entrepreneurial Leadership.
Board of Advisors, West Suburban Technology Enterprise Center
Board Member, The Chicago Entrepreneurial Center
Advisor to the Chicago Mayor’s Council of Technology Advisors.

TiE Midwest

President. TiE fosters entrepreneurship globally through mentoring, networking, and education. Dedicated to the virtuous cycle of wealth creation and giving back to the community, TiE’s focus is on generating and nurturing our next generation of entrepreneurs. With 13,000 members, including over 2,500 charter members in 57 chapters across 14 countries, TiE hosts a wide range of programs and events, including TiEcon, the largest professional and networking conference for entrepreneurs. 2014 – Present, Full-time.
Faculty Vitae of Brian T. Bailey

Education
Master of Information Technology and Management, Illinois Institute of Technology, 2014
Bachelor of Science in Technical Management, DeVry University, 2009
Associate of Applied Science in Desktop Prepress, College of DuPage, 1997

Academic Experience
Illinois Institute of Technology
Adjunct Instructor of Information Technology and Management, 2012-Present, Part-time

Non-Academic Experience
Illinois Institute of Technology
Director, Web Development and Web Services, Responsible for managing and leading the web services team within the Office of Marketing and Communications and determining the direction for University web development initiatives. Currently our primary focus is to transition all college websites from the legacy content management system to the open source Drupal system. Secondary focus will be new web application needs the University may have in the future. 2014-Present, Full-time
Web Developer, Work as a web developer on the Office of Marketing and Communications web services team. Develop web sites and applications for the University, primarily in the Drupal content management system. 2012-2014, Full-time

Web Asylum
Web Developer, Designed, built, and edited client websites using standards compliant HTML, CSS, and JavaScript. Suggested software, server, and third party services to solve client needs. 2008-2012, Part-time

The Ink Well
Graphic Design & Prepress Supervisor and IT Administrator, Served as the IT administrator in a mixed OS system network. Researched and recommended all IT related purchases. Created customer web sites and web portals. Managed all web, email, and Internet services for the company. Supervised the graphic design and prepress departments including overseeing all digital print production. 1997-2012, Full-time

Current membership in professional organizations
Drupal Association
Gamma Nu Eta – the National Information Technology Honor Society

Honors and Awards
IIT Staff Service Excellence Award – 2015
Orbitz Coding Challenge Winner – 2011
Faculty Vitae of Carl Robert Carlson

Education
Ph.D., Computer Science, University of Iowa, 1972
M.S., Computer Science, University of Iowa, 1968
B.A., Mathematics and Accounting, Augustana College, 1966

Academic experience
*Illinois Institute of Technology*, Full Time 1984 – Present
  Director, Entrepreneurship Academy 2015 -- Present
  Dean, School of Applied Technology 2001 – Present
  Director, Rice Campus 1998 – Present
  Professor 1989 – Present
  Associate Professor 1984 - 1989
  Chair, Computer Science Department 1984 – 1998

*Northwestern University*, Full Time 1972 -- 1979
  Assistant Professor

Non-Academic experience
*Bell Laboratories*, Member of Technical Staff, 1979 – 1982
*Amoco Oil Company*, IT Strategic Analyst, 1982 – 1984

Current memberships in professional organizations
Association for Computer Machinery (ACM)
Professional Membership in Gamma Nu Eta, National IT Honor Society

Honors and awards
Best Paper ACM SIGITE/RIIT 2013 – Design Patterns as First-Class Connectors

Service Activities
Numerous Service Activities at IIT

Publications and presentations


“Design Patterns as First Class Connectors,” Sargon Hasso and C.R. Carlson, Best Research Paper Award at ACM SIGITE/RIIT Conference, Orlando, FL, October 2013

“Introducing Design Pattern-Based Abstraction Modeling Construct as a Software Architecture Compositional Technique, Sargon Hasso and C.R. Carlson, Ninth Annual SATURN Conference, Minneapolis, MN, April-May 2013

Proposed the Center for Professional Development which was later named the School of Applied Technology (SAT). SAT is the fastest growing college at IIT becoming one of the major colleges for the future of IIT.
Faculty Vitae of Carol Davids

Education
Degree
Columbia University, School of Engineering and Applied Science, New York, New York, Bachelor of Science, Applied Mathematics, 1967

Non-degree
Illinois Institute of Technology, Chicago, Illinois, course work in Electrical Engineering
DePaul University, Chicago, Illinois, course work in Telecommunications

Academic Experience
Illinois Institute of Technology, June 2003 – Present
  Director, Real-Time Communications Lab
  Industry Professor, School of Applied Technology

Non-Academic Experience
Davids Consulting, Telecommunications Consulting Engineer, April 2002 - present
Tellabs Operations, Broadband Media Group, Cablespan Division, November 1998- April 2002
  Staff Engineer, Systems Engineering Group
  Staff Engineer, Validation and Test Group
Motorola, CableComm Division, Lead Engineer, July 1995 – November 1998
Ameritech/Illinois Bell, AT&T, Various technical assignments related to data transmission and call processing, October 1972 – November 1994 (Retired)

Publications & Presentations
  o “Benchmarking the Session Initiation Protocol (SIP)”, Conference Paper, IEEE CQR, May 12, 2015, paper accepted, publication pending presentation

Drafts
  o draft-ietf-bmwg-sip-bench-meth-12, 2014 (pending publication)
  o draft-ietf-bmwg-sip-bench-term-12, 2014 (pending publication)

Patent
European Telecommunications Standards
Co-author, as a member of Specialist Task Force (STF)–216 at the European Telecommunications Standards Institute (ETSI) various VoIP Specifications, including:
  o TS101 909 Part 4, Network-based Call Signaling specification.
  o TS101 909 Part 16, CMS-to-CMS Signaling specification.
  o TS101 909 Part 23, Line Control Signaling specification and other parts of TS101 909.

CableLabs, Packet Cable Project
Co-author, as an IPR Vendor at CableLabs, Packet Cable Project, various VoIP specifications, including:
  o PKT-SP-CMSS: CMS-to-CMS Signaling Specification
  o PKT-SP-EC-MGCP: NCS Signaling Specification

Related Activities
Lab Development and Innovation:
  ● Designed and built the Real-Time Communications (RTC) Lab at IIT, a venue for collaboration between industry partners and the academic community.
  ● Create and guide research and development projects for the RTC Lab.
  ● Initiate and guide viable projects toward patents and commercialization.

Course and Curriculum Development:
  ● Created, developed and teach the two semester course Telecommunications over IP Networks (ITMO 546 and ITMO 547) at the IIT School of Applied Technology (SAT), using the RTC Lab as the site for both graduated learning exercises and for long term project development.
  ● Created, developed and teach the one semester course on Telecommunications Networks (ITMO 545) at the IIT SAT, using field trips and VoIP Lab projects to broaden the learning experience.
  ● Organize field trips for the VoIP and Telecommunications classes to telecommunications service providers’ central offices and data centers, to product vendors’ laboratories and to industry conferences and forums, introducing students to the daily operations, facilities and equipment in current use.

Outreach to industry and academia:
  ● Creator of the RTC Roundtable at IIT, a twice-yearly public event at which students present and demonstrate their projects
  ● Creator and Chair of the Annual RTC Conference and Expo at the IIT, an interface between the vendor/developer, service provider and enterprise communities and the academic and student community.

Current membership in professional organizations
  ● Association of Computing Machinery (ACM) Member
  ● IEEE Senior Member
  ● IPTComm Steering Committee and Co-Chair
  ● IIT RTC Conference, Hackathon and Expo - Chair
Faculty Vitae of Shawn Davis

Education
Bachelor of Music, Specialization – Jazz Performance (Percussion) Northern Illinois University, DeKalb, IL, 2004

Academic experience
Adjunct Instructor Information Technology and Management, Illinois Institute of Technology, Chicago, IL, 1/2014 – Present

Non-Academic experience
Edelson PC, Chicago, IL
Director of Digital Forensics; Information Protection Specialist 8/2013 – Present
Motorola, Schaumburg, IL
Network Security Analyst, Operations Center; Senior Account Manager 7/2012 – 8/2013
ChicagoMicro, Arlington Heights, IL
Senior Account Manager 6/2010 – 8/2013
B2B Computer Products, Addison, IL,
Presales Engineer/Senior Account Manager 11/2006 -6/2010

Certifications
GIAC Incident Handler (GCIH)
GIAC Forensic Examiner (GCFE)
CompTIA Security+
CompTIA Network+
CompTIA A+
Apple Certified Technical Coordinator (ACTC)
Amateur Radio – Technician Class

Memberships in Professional Organizations
Global Information Assurance Certification (GIAC) Advisory Board
IIT Center for Cyber Security and Forensics Education

Honors & Awards
Certificate of High Academic Achievement (4.0 GPA) - Illinois Institute of Technology
Induction into Gamma Nu Eta - National Technology Honor Society of Technology

Service Activities
Windy City Habitat for Humanity
Publications and Presentations

“Public & Private Cloud Forensics,” FBI Regional Computer Forensic Laboratory, Chicago, IL, 5/2012

Professional Development
Web App Penetration Testing & Ethical Hacking (6-day Course), SANS Institute, New Orleans, LA 2013
Hacker Techniques, Exploits & Incident Handling (6-day Course), SANS Institute, Scottsdale, AZ 2015
Faculty Vitae of Madeleine England

Education
Bachelor of Information Technology & Management, Illinois Institute of Technology 2011
Master of Information Technology & Management, Illinois Institute of Technology 2012

Academic experience
Illinois Institute of Technology
Ranks
Industry Associate Professor of Information Technology and Management, 2012-Present, Part time
Titles
Director of Academic Affairs & Student Services, IIT School of Applied Technology 2013–present, Full time
Graduate Adviser, ITM Department 2011–Present, Part time
Department Manager, ITM Department 2012–2013, Full time
Program Coordinator, ITM Department 2011–2012, Full time

Non-academic experience
Idea Development Consulting
Self-Employed. IT and business development. Retained by firm for USAID’s consulting firm, Academy for Educational Development. 2007–2012, Full time

Womencare Counseling Center
Director, Business & Development. Oversaw operations, finance, human resources, legal, contract negotiations, marketing. 1991–2007, Full time

BEHIV

Certifications
Advanced Web Development, Oakton Community College 2011

Honors and awards
Member, Gamma Nu Eta - the National Information Technology Honor Society, 2011

Service activities
Illinois Institute of Technology
Council Member, The Entrepreneurship Academy, 2014-Present
Member, College of Psychology Board of Overseers 2012-2014
Chapter Administrator, Beta Chapter, Gamma Nu Eta IT Honor Society, 2012-Present
President, Beta Chapter, Gamma Nu Eta IT Honor Society, 2011
Faculty Vitae of Bonnie A. Goins

Education

Master of Science in Information Systems, University of Pittsburgh, 1996
Bachelor of Arts, Major in Psychology University of Iowa, 1994

Academic experience

Illinois Institute of Technology

Ranks

Industry Professor of Information Technology and Management, 2007-Present, Part time

Non-academic experience

Paylocity

Senior Security Analyst. Working directly with the Chief Information Security Officer, I create, implement, maintain and monitor the Paylocity Information Security Program and manage efforts for the Company’s Sarbanes-Oxley compliance. From a security program perspective, I have created the security strategy for the company and aligned it with their respective risk, security and compliance goals. I create, implement, maintain and monitor their security deliverables for all aspects of the Program. 2014-present, Full-time.

Security Strategy, Management, Governance, Technology Consultant

As a consulting senior executive and a trusted security/business advisor to senior executives, I design, develop, implement and audit security, risk, regulatory and compliance programs and their components. I align these programs with the organization’s current technical and business objectives, such as ISO 27001/2, ISO 20001/2, CobiT, ITIL, NIST and CMMI; designing and implementing appropriate technical security architectures; conducting audits and providing audit support for SOX, HIPAA, PCI, NERC/FERC, FISMA, GLBA, FFIEC, FDIC, OTS and other regulatory programs; Organizations include the World Bank (part-time), Sidley Austin (full-time), Andersen Consulting (full-time), Carnegie Mellon University (full-time), Lucent Technologies (full-time), EDS (full-time), State Farm Insurance (full-time), Blue Rhino (full-time), Jefferson Wells (full-time), Isthmus Group (full-time), HotSkills (full-time) 1993-Present, Full-time and Part-time

The World Bank Group (IFC and WB)

Information Security Trusted Advisor. Performed security and gap assessments for the organization and mapped assessment results to regulatory and security requirements. I worked with the Lead Information Security Officer and leadership to build the security and work programs. 2011-2014, Full-time and Part-time

US Cellular

Manager: IT Governance, Risk and Compliance (IT GRC). Trusted advisor to IT, Engineering, Facilities, the business and executives on risk management, regulatory and security issues. 2012-2013 Full-time.

CommScope


Certifications

Certified Information Systems Security Professional (CISSP)
Bureau Veritas (BVQI) Certified BS7799 Lead Auditor
Certified Business Continuity Planner (CBCP) (exam passed, application in process)
Certified in the Governance of Enterprise Information Technology (CGEIT)
Certified in Risk and Information Control (CRISC)
Certified Information System Auditor (CISA)
Certified Information Security Manager (CISM)
ITIL Foundations certification (ITIL)
Member, Business Continuity Institute (MBCI)
National Security Agency (NSA) Information Assurance Methodology (IAM) for security: certified assessor
National Security Agency (NSA) Information Evaluation Methodology (IEM) for security: certified assessor
Payment Card Industry Professional (PCIP)

Current membership in professional organizations
International Information Systems Security Certification Consortium ((ISC)²)
Information Systems Audit and Control Association
The Business Continuity Institute

Honors and awards

Service activities
Illinois Institute of Technology
Member, Curriculum Committee, Department of Information Technology and Management
Distinguished Member, Illinois Institute of Technology Center for Cyber Security and Forensics Education (C2SAFE)

Publications and presentations
Contributing Reviewer, SANS HIPAA Step-by-Step, 2004 (2nd ed.)
Coauthor, CISSP Common Body of Knowledge (CBK), (ISC)², 2006 ed.
Achieving PCI DSS Compliance: A Compliance Review: Bonnie Goins (Pilewski) and Christopher A. Pilewski
CERT Resilience Management Model: An Overview: Bonnie A. Goins (Pilewski) and Christopher A. Pilewski
Creating a Secure Architecture: Christopher A. Pilewski and Bonnie A. Goins
Enterprise Assurance: A Framework Explored: Bonnie A. Goins
Identifying Critical Business Functions: Bonnie A. Goins
Managing Security by the Standards: An Overview and Primer: Bonnie A. Goins
NERC Compliance: A Compliance Review: Bonnie Goins (Pilewski) and Christopher A. Pilewski
Network Security Overview: Bonnie A. Goins and Christopher A. Pilewski
Faculty Vitae of Jeremy R. Hajek

Education:
* Bachelors of Information Technology and Management, Illinois Institute of Technology, 2004

Academic Experience
* Illinois Institute of Technology, Chicago, IL. 2009-2012
  - Adjunct Professor, School of Applied Technology  2009-2012
  - Undergraduate Advisor, Information Technology and Management  2013-Present
  - Graduate Advisor, Information Technology and Management  2012-Present

Non-Academic Experience
* Illinois Institute of Technology  2005-2014
  - Computer Systems Manager, Illinois Institute of Technology  2005-2012

Certifications or Professional Registrations
* CompTIA A+ Certification

Current Membership in Professional Organization
* NA

Honors & Awards
* NA

Service Activities
* Faculty Advisor, Illinois Institute of Technology, ITMO student group  2013-present
* CIS Program Advisory Council Member, Triton Community College  2015

Publications and Presentations

Professional Development Activities
* Local Google Developers Group
Faculty Vitae of Dennis J. Hood

Education
BS, Electrical & Computer Systems Engineering, Rensselaer Polytechnic Institute, 1987
MS, Computer Science, Stevens Institute of Technology, 1992
MBA coursework, Stuart Graduate School of Business, Illinois Institute of Technology, 1997-1998

Academic experience
Illinois Institute of Technology, Chicago, Illinois
1/1999 – present
Adjunct Industry Professor, Computer Science Department
Responsible for developing and teaching courses within the Department of Computer Science

Adjunct Industry Professor, School of Applied Technology
8/2004 – present
Responsible for developing and teaching courses within the IT Management specialization.

Non-academic experience
Bank One, Chicago, Illinois

FVP / Applications Development Director – Intranet Service Delivery
Established and led the intranet application technology team in support of Bank One’s corporate staff units.

VP / Lead Applications Developer – Intranet & Emerging Technologies
1/1999 – 12/1999
Program manager and lead developer for the Intranet Phonebook application, a system used approximately 30,000 times per day by a user population of approximately 75,000 Bank One employees, contractors and vendors.

AVP / Applications Developer – Commercial Banking
Enhanced and supported applications in the FirstWindow2000 suite of Treasury Management products.

Creighton Manning, Inc., Delmar, New York

Director of Software Development, Product Development
Managed the software development team and led major development initiatives.

Programmer
Designed and developed software solutions for CMI’s desktop applications utilizing Pascal, Paradox and FoxPro for Windows.

ComCon, Inc., Software Analyst, Shrewsbury, New Jersey

Software Analyst
Analyzed software systems and development processes.

Concurrent Computer Corporation, Tinton Falls, New Jersey
Designed and developed programs for diagnosing the health of parallel processing computer systems. Code developed in Assembler, C and microcode.
Certifications
Bank One Professional Development
Leadership Development Program, 2001
Managerial-Supervisory College, 2000

Professional affiliations
Association for Computing Machinery (ACM) - SIGCSE

Service activities
Illinois Institute of Technology
- Career development counseling
Industry/Community
- K-12 technology education outreach

Select Publications
- Co-authored a series of technical reports on the use of the Ada programming language for DoD-specified object-oriented software development. Topics included a comparison of Ada with other object-oriented languages, and a comparison of the object-oriented and the structured development approaches.

Professional Development Activities
RootsTech Innovator Summit, 2015

Honors and awards
IPRO best in track, faculty advisor, 2010
Faculty Vitae of Peisong Huang

Education
Bachelor of Engineering, Computer Engineering, University of Tianjin, China 1984
M.Phil. Software Engineering, University of Portsmouth, U.K. 1993

Academic experience
Illinois Institute of Technology, Adjunct Industry Professor of Information Technology and Management, 2010-Present, part time
Oxford Brookes University, Lecturer in Computer Science, 1993-1996, part time
University of Portsmouth, Teaching and Research Assistant in Computer Science, 1990-1993, part time

Non-academic experience
Wistron Mobile Solutions (previously part of Blackberry), IOT specialist, responsible for engineering activities and processes for device carrier certification. 2013 - Present

OnStar, General Motors, Engineering Group Manager, responsible for development of product roadmap and future strategies, system architecture and design, product engineering and deployment. 2012-2013

Nokia Siemens Network, Senior Product Line Manager, responsible for global TD-LTE eNodeB field trials and development. 2011-2012

Motorola, Senior Engineering Manager, Distinguished Member of the Technical Staff, responsible for global WiMAX CPE product trials and deployment. And responsible for a number of telecommunication systems design and development. 1997-2011

Honors and awards:
Worldwide Outstanding Employee Awards (Motorola)

Publications and presentations
Deploying VoIP over Wimax, VoIP Conference and Expo 2009, IIT, Rice Campus, IL

Patents
Method and apparatus for splitting control and media content from a cellular network connection, Patent number: 6842621

Method and system for wireless handoffs, Patent number: 8145218
Faculty Vitae of Sean Hughes-Durkin

Education
   Master of Information Technology and Management, Illinois Institute of Technology 2010
   Bachelor of Information Technology and Management, Illinois Institute of Technology 2009
   Associate of Applied Science, Robert Morris College 2004

Academic experience
Illinois Institute of Technology
   Adjunct Instructor of Information Technology and Management, 2013-Present, Part-time
   Teaching Assistant of Information Technology and Management, 2007-2009, Part-time

Non-academic experience
Trustwave
   Security Engineer,

Certifications
   CompTIA Security+

Publications and presentations
   Publication: “A Design for Building an IPS Using Open Source Products”, SANS Institute,
               August 10, 2006
Faculty Vitae of Alan Johnston

Education:


University of Melbourne, Australia. (1984 - 1987) Bachelor of Engineering (Electrical and Electronic) Honors degree with First Class Honors.

Academic Experience:

Illinois Institute of Technology Chicago, IL (2015 - present) Adjunct Industry Professor of Information Technology and Management. Part time.

Washington University in St. Louis St. Louis, MO (2000 - present) Adjunct Instructor in Electrical and Systems Engineering. Part time.

Non-Academic Experience:


Current Membership in Professional Organization:
Senior Member, IEEE.
Honors & Awards:
WebRTC Pioneer Award, WebRTC Conference & Expo 2014.

Service Activities:
Mentor to high school robotics team, FRC team 1329.

Publications:


FACULTY VITAE OF RAJ KRISHNAN

EDUCATION

Masters in Engineering, McGill University, Montreal, Canada 1980

Master of Business Administration, School of Management Studies, Cochin, India 1978

Bachelor of Engineering, Madras University, India 1976

ACADEMIC EXPERIENCE

Adjunct Professor, DePaul University, IL 2010 – Current

Adjunct Professor, Illinois Institute of Technology, IL 2014 – Current

NON-ACADEMIC EXPERIENCE

Senior Technology Evangelist, Microsoft Corporation 2002 – Present


Director, Information Technology Group, Sutherland Inc. 1994 - 1996

Manager - Product Support, Allied Signal Aerospace 1990 - 1994

PUBLICATIONS

“Stress Analysis Of Implant System,” Application Development conferences 1980
Faculty Vitae for Jason Brent Lambert

Education
Bachelor of Science, Computer Science, University of Canterbury, New Zealand, 2008
Master of Science, Computer Graphics Technology, Purdue University, Indiana, 2010

Academic Experience
Adjunct Industry Associate Professor, Illinois Institute of Technology, Illinois (2012-2015)

Non-Academic Experience
Senior Engineer – Here, a Nokia Company (2012-present) Description: Team lead for engineering team of 10 individuals within a large organization building mapping and production software pipelines.
Lead Engineer – SGK Studios (2014-present) Description: Owner and Lead on Projects for a small business developing mobile applications and games
Web Systems Software Engineer – Purdue University (2010-2012) Description: Developer on an engineering team responsible for building a cloud computing platform for collaboration for Civil and Earthquake engineers collaborating under the National Science Foundation.
Research Software Engineer – Purdue University (2008 – 2010) Description: Developer on an engineering team responsible for building a networked online virtual world for Aeronautical Engineering students.

Recent Publications:
doi: 10.1109/FIE.2011.6143105
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6143105&isnumber=6142695
Masataka Okutsu, Daniel DeLaurentis, Sean Brophy, Jason Lambert, Teaching an aerospace engineering design course via virtual worlds: A comparative assessment of learning outcomes, Computers & Education, Volume 60, Issue 1, January 2013, Pages 288-298, ISSN 0360-1315,
(http://www.sciencedirect.com/science/article/pii/S0360131512001728)

Recent Professional Development Activities
Attended and presented at the AWS Re:invent 2014 conference – November 2014
Faculty Vitae of William P. Lidinsky

Education
- BS Electronic Engineering, Illinois Institute of Technology, 1961
- MS Computer Engineering, Illinois Institute of Technology, 1968
- MBA (applied statistics minor) University of Chicago, 1974
- Many advanced courses and specialized training.

Academic experience
Illinois Institute of Technology
- Ranks
  - Industry Professor of Information Technology & Management, 2010-Present, Full-time
  - Alva Todd Professor of Information Technology & Management, 2001-2010
  - Adjunct Associate Professor of Computer Science, 1979-2001, Part-time
- Titles
  - Director of the Security & Forensics Lab, School of Applied Technology, 2010-Present
  - Interim Director of Center for Cyber Security and Forensic Education, 2014-Present
  - Assistant Director, Information Technology & Management Program, 2001-2010

Non-academic experience
Fermi National Accelerator Laboratory
- Head, High Energy Physics Network Resource Center. Direct and participate in research, design, and prototype development of systems for achieving world wide distance collaboration, advanced networking, and distributed computing in support of particle physics research. Effort included solicitation of funds of close to one million dollars per year for computer internetworking and collaborative computing technological applications to particle physics research. 1990-2001, Full time

AT&T-Bell Laboratories
- Technical Supervisor. Directed and participated in research, design, prototype construction and software development of a 450 Gbps low delay fiber optic campus/metropolitan area computer network. Researched markets, obtained funding, planned and managed projects, and participated in the research, design, and implementation. Yielded over 20 internal papers, several published presentations and 14 patents. 1981-1990, Full-time

International Harvester, Science and Technology Laboratory

Argonne National Laboratory
- Research Group Leader. Investigator, designer, and project manager for a Laboratory-wide local area network. Included: determination of Laboratory needs and resultant network features and services; design of network protocols, host interfaces; development of a multiprocessor packet switch; network operating system; design and coding of network software; use of fiber optics for high noise links, and coordination of Laboratory-wide cable plant. 1968-1980, Full-time.

Nuclear-Chicago Corp.
- Senior Project Engineer. R&D in nuclear and biomedical instruments and systems. Designed and developed UNILUX II computing biomedical instrument. 1965-1968, Full-time

Admiral Corp. Government Electronics Division
- Project Engineer. Designed analog and digital guidance electronics for TOW missile, lightweight TPSY-21 anti-personnel radar, and an IFF transponder. Engaged in research into
hybrid integrated circuits. Resulted in development of a clean room research and development facility. 1962-1965, Full-time

**ITT Kellogg Communications Systems Division**

*Design And Reliability Engineer.* Designed and verified reliability of analog and digital electronics for use in U.S. Air Force airborne switching center and for ATLAS missile ground support equipment. 1960-1962, Full-time

**Certifications**

IC-Council Penetration Testing Certification

**Current membership in professional organizations**

Senior Member, Association for Computing Machinery
Senior Member, IEEE
High Technology Crime Investigation Association

**Service activities**

*Illinois Institute of Technology*

Chair and Co-Chair, ForenSecure information security conference, 2003-Present

**Industry/Community**

Performed computer forensic analysis and functioned as expert witness for several criminal and civil proceedings.
Member of the governing Standards Executive Committee of IEEE Project 802, 1980 - 2001.
Technical Program Chair, MIDCOM 89, September 1989.
General Chair of Ninth Data Communications Symposium, Sept. 1985.
Program Chair, Eighth Data Communications Symposium, Oct. 1983.
Tutorial Chair, Seventh Data Communications Symposium, Oct. 1981.
Past chairman of IEEE Computer Society, Chicago Chapter.
Past chairman if IEEE Nuclear Electronics Society, Chicago Chapter.
Chair of MICRO-8, the Eighth National Workshop on Microprogramming.

**Publications and presentations**

Organized and chaired sessions at many conferences and symposia.
Published many papers and formal technical reports.
Faculty Vitae of Louis F. McHugh IV

Education
- Master of Cyber Forensics and Security, Illinois Institute of Technology, est. 2015
- Master of Science Information Systems and Technology, University of Michigan, 2010
- Bachelor of Science Computer Information Systems, Northern Michigan University, 2004
- Associate of Science Computer Information Systems, Northern Michigan University, 2002

Academic Experience

Illinois Institute of Technology

Ranks
- Adjunct Associate Industry Professor of Information Technology and Management, 2014-Present, Part time
- Adjunct Instructor of Information Technology and Management, 2012-2014, Part time

Titles
- Member, Center for Cyber Security and Forensics Education, 2014-Present, Full time
- Course Coordinator, ITM 301: Introduction to Contemporary Operating Systems & Hardware I, 2013-Present, Part time
- Graduate Faculty Adviser, Department of Information Technology and Management, 2013-2014, Part time

Henry Ford Community College

Ranks
- Adjunct Faculty Instructor of Computer Information Systems, 2010-2012, Part time

Non-academic experience

Illinois Institute of Technology

- Computer Systems Manager, IIT School of Applied Technology-Rice Campus; Primary support/system administrator for campus, responsible for four labs totaling 100 machines, Supervise all student staff employees providing end-user and audiovisual support to clients, faculty, and staff. 2012- Present, Full time

Truven Health Analytics

Thomson Reuters—Healthcare

- Technical Support Analyst, provided Tier-2 and Tier-3 support to end-users, administered the setup and distribution of new laptops and desktops to end-users, assisted other team members in troubleshooting IT issues affecting the companies’ end-users. 2009-2012, Full time

University of Michigan-Dearborn

- System Administrator, Department of Computer and Information Science; supervised six employees responsible for monitoring lab usage and providing IT assistance, managed three student labs totaling 75 machines for the department, supported 14 faculty research labs used in class projects and for student projects. 2007-2009, Full time

Current Memberships in Professional Organization

- Association for Computing Machinery + SIGITE
- Association of Information Technology Professionals

Honors and Awards

- Student Member, Upsilon Pi Epsilon – the International Honor Society for the Computing and Information Disciplines, 2008
Service Activities

Illinois Institute of Technology

Member, Information Technology and Management Advisory Council, 2014-Present

Industry/Community

CDW Advisory Board for Education, 2014-Present
Treasurer, Villa Park Masonic Lodge #1113 2014-Present
Vice Chairman, Board of Advisors, Theta Iota Chapter-Tau Kappa Epsilon Fraternity 2014-Present

Publications and Presentations


Professional Development Activities

Curriculum Development

ITMS 557/TECH 457 Introduction to Cyber Warfare, Information Technology and Management, Illinois Institute of Technology

Conferences Attended

Michigan Cyber Summit, Novi, Michigan, 2013
International Conference on Cyber Warfare and Security, Purdue University, 2014
Faculty Vitae of Bruce A. Mueller

Education
Bachelor of Business Administration, Loyola University, Chicago, Illinois, 1968
Master of Business Administration, Loyola University, Chicago, Illinois, 1974

Academic Experience
Illinois Institute of Technology
Adjunct Professor 2007-Present, part-time

Other Institutions
Adjunct Professor, Harper College, Palatine, Illinois, 1975-Present, part-time
Adjunct Professor, Keller Graduate School of Management, Chicago, Illinois, part-time

Professional Experience
Winning Best Solutions, LLC.
Founder, Business development and solutions consulting with companies and universities: strategy, business process management, sales growth, information technology, quality and customer delight. 2012-Present, Full-time.

Illinois Institute of Technology

Global Human Resources Solutions, Affiliated Computer Service, Dallas, TX
Managing Director Manage sales, finance, operations, information technology, technology applications, work flow maximization, acquisitions and management of a global outsourcing business. 2003-2006, Full-time.

Motorola, Inc.
Corporate Vice-President, Human Resources Operations and Technology. Responsible for global design, development, operation, delivery, funding and technology for over 15 global organizations. 1983-2003, Full-time.

Current memberships in professional organizations
Beta Gamma Sigma
Alpha Sigma Nu

Service activities
Board Memberships: Northwest Community Hospital, Gottlieb Memorial Hospital, Harper College Foundation Board (President); and several local community service organizations. Prior member: National Association of Manufacturers, Chief Privacy Officer and the Conference Board.
Faculty Vitae of James Papademas

Education
- MS in Marketing Communications, Roosevelt University 1984
- MBA, Roosevelt University 1977
- MISM Programming Track, Keller Graduate School of Management 2012

Academic experience
- *Illinois Institute of Technology*
  - Industry Professor of Information Technology and Management, 2013-Present, Full time
- *Oakton Community College*
  - Adjunct Professor, 1998-Present, Part-time
- *Wright Community College*
  - Adjunct Professor, 1998-Present, Part-time

Non-academic experience
- *ADP (Automatic Data Processing)*
- *TetraPak*
- *American Library Association*
  - Payroll Accountant/Manager: Performed General accounting duties; Payroll Conversion from Mainframe to HRIS client server with D&B’s THR sys.; Report Generation; Set up ETF’s with bank & IRS via PROCom software; Created batch files for auto backups of PR system to Caravan tape drive. Helped create check/Direct Dep. mods with Clipper DbaS/E. 1994-1996, Full Time
- *H&R Block*
- *Follett*

Certifications
- Oracle Teaching Certification

Current membership in professional organizations
- Member of IEEE

Honors and awards
- Alpha Beta Chi (for Honors with Keller)

Service activities
- AITP advisor
- Sigma Beta Delta advisor
Faculty Vitae of Martin J. Schray

Education
M.B.A., Management and Labor Relations, Cleveland State University, Cleveland, OH – August, 1992.
B.S., Computer and Information Science, Cleveland State University, Cleveland, OH – June, 1988.

Academic Experience
DePaul University, Chicago, IL, Adjunct Faculty – December 2002 to present
Illinois Institute of Technology, Chicago, IL, Adjunct Faculty – August 2013 to present

Non-Academic Experience
Microsoft, Downers Grove, IL
Senior Technical Evangelist – November 2012 to present
Responsibilities include leading conversation, events, workshops, office hours, hack-a-thons and presentations relating to Windows 8 development and skills development by faculty, students, startups and professional developers
Technical Evangelist Director, Eastern Central Region – July 2010 to November 2013
Responsibilities include leading, managing and coaching DEs, ITEs and ADEs in the Heartland and Midwest districts to expand awareness and grow adoption of Windows Phone, Azure and Windows 8 to our target technical audiences. Ensure progress and success by aligning to business strategy, defining execution plans, and tracking/managing progress to ensure successful engagement with our technical audiences.
Academic Developer Evangelist Director, US Territory ADE – February 2009 to June 2010
Responsibilities include defining strategy & tactics and leading the execution of all US ADEs to ensure successful engagement with higher education faculty and students. Responsible for working with the higher education virtual team including recruiting, developer marketing, Microsoft Research, as well other Developer and Platform Evangelism teams to further Microsoft’s position in higher education through cross team collaboration.
Academic Developer Evangelist Manager, Central and Western US – July 2005 to February 2009
Responsibilities include framing strategy and tactics for ADEs in the central and western United States to ensure successful engagement with higher education faculty and students. Responsible for working with the higher education virtual team including recruiting, developer marketing, Microsoft Research, as well other Developer and Platform Evangelism teams to further Microsoft’s position in higher education through cross team collaboration.
Academic Developer Evangelist Lead Central US – July 2004 to July 2005
Responsibilities include managing ADE’s in the central United States to define, track and ensure successful engagement with high school and higher education faculty and students. I am also responsible for working with the higher education virtual team in recruiting, developer marketing, Microsoft Research, as well the Developer and Platform Evangelism teams to further Microsoft’s position in higher education through cross team collaboration.
Academic Developer Evangelist – October 2002 to June 2004
Divine, Lisle, IL, Director Product Management – August 2001 to October 2002 and Director Implementation Services – January 2000 to August 2001

NetGenics, West Chicago, IL, Senior Consultant– July 1997 to January 2000

Greenbrier & Russel, Schaumburg, Illinois, Product Manager – November 1994 to July 1997

Baker & Hostetler, Cleveland, Ohio, Database Analyst – April 1992 to October 1994

LTV Steel Company, Cleveland, Ohio, Programmer Analyst – May 1988 to April 1992

Certifications
Microsoft Certified Professional (MCP), C++, Windows 8 and Windows Phone 8 Development, C#, Visual Basic .NET, SQL Server, ASP.NET, .NET, HTML

Professional Organizations
Hyde Park Angels

Honors and Awards
● Microsoft 2011 Gold Star awarded - Led Central Region and US Imagine Cup efforts; Most successful US imagine cup
● Microsoft 2011 Q1 DPE Quarterly award winner – Martin, Hilary and Jessica for campus live engagement
● Microsoft 2003 Best in Role Technical Evangelist
● Microsoft Gold Club (2006 and 2014)
● Microsoft Education Solutions Group ADE achievement award (2002-2004)
● Microsoft North America Diversity Award winner (twice)
● Microsoft US evangelism quarterly awards (three times)

Service Activities (institutional & external)
Volunteer Willow Creek DuPage Care Center
Volunteer Hesed House
Volunteer Willow Creek Alpha Program

Publications/Presentations
3,000 people annually in my role at Microsoft at local technical conferences and events.

Professional Development Activities
Pursuing my Microsoft Certified Professional (MCP) in Azure Development
Demonstrated expertise in JavaScript and JQuery
Demonstrated expertise in JavaScript Windows Applications
Demonstrated expertise in Windows Universal Apps
Demonstrated expertise in building apps for the Windows Store
Faculty Vitae of Sheikh Shamsuddin

Education
Master of Science in Computer Science, Bradley University, Peoria, IL. (1986)
Bachelor of Science in Electrical Engineering Technology, Bradley University, Peoria, IL (1984)

Academic Experience
Assistant Professor of Computer Information Systems and Computer Inter-Networking Technology, College of DuPage, Glen Ellyn, IL. (2012 – Present)
Adjunct Industry Associate Professor of Information Technology and Management, Illinois Institute of Technology, Chicago, IL. (2005 – Present)
Adjunct Faculty of Computer Information Systems, College of DuPage, Glen Ellyn, IL. (1988 – 2012)
Director of Computer Science Department, Mid-State College, Peoria, IL. (1986 – 1987)

Non-Academic Experience
Coordinator/Chairperson, Department of Computer Information Systems, College of DuPage (Current)
Responsible for managing computer courses, faculty members, and department budget.

AT&T Bell-Labs (Lucent Technologies, later became Alcatel-Lucent) (1988 – 2012)
Job responsibilities included administering multiple department computing servers and network operations; supported engineers, testers, software developers and general users. The responsibilities also included system setup and installation, system patching, configuration and troubleshooting, network operation and infrastructure, NFS, TCP/IP, Ethernet switches and routers, shell script programming, relational databases, website design and administration. Other tasks included leading the team into the right direction as a team leader, future growth planning in technology as well as budget, upgrading servers and contract agreements. While working, I taught part-time at the College of Dupage teaching various computer science subjects.

Linear Corporation, Peoria, IL. (1986 – 1987)
Responsible for writing business application software such as Payroll System, Accounts Payable and Receivable, and Bills of Material. The tasks also included administrating Unix Operating System.

Certification
Computer Forensics Certified (Forensic ToolKit – AccessData Certification Examiner) – ACE

Honors and Awards
Outstanding Instructor of the Year at the College of DuPage - 1995, 2013

Publication
The Malay Art of Self-Defense: Silat Seni Gayong
Faculty Vitae of Raymond E. Trygstad

Education
Bachelor of Science, European Studies, United States Naval Academy 1977
Undergraduate Pilot Training, Rotary Wing, United States Navy 1979
Master of Science in Systems Management, University of Denver 1990
Diploma in Aviation Safety, Naval Postgraduate School 1990
Ph.D. studies Computer Science/Technical Communication, Illinois Institute of Technology

Academic experience
Illinois Institute of Technology
Ranks
Industry Professor of Information Technology and Management, 2011-Present, Full time
Adjunct Professor of Public Administration, 2007-Present, Part time
Lecturer in Information Technology and Management, 2002-2011, Part-time
Lecturer in Computer Science, 2001-2002, Part time
Lecturer in Business (E-Commerce), 2000-2002, Part Time
Adjunct Assistant Professor of Computer Science 1995-2001, Part time
Assistant Professor of Naval Science, 1992-1994, Full time
Titles
Associate Chair and Director of Undergraduate Advising, Department of Information Technology and Management, 2012-Present, Full time
Associate Director/Curriculum Coordinator for Information Technology & Management Programs and Undergraduate Adviser, 2002-2012, Full time
Curriculum Coordinator for Internet Education, Department of Computer Science and Applied Mathematics, 1995-1999, Part time
Curriculum Coordinator/Class Adviser, Department of Naval Science, 1992-1994, Full time

Non-academic experience
Illinois Institute of Technology
Director of Information Technology, IIT School of Applied Technology and IIT Center for Professional Development; responsible for managing staff and assets including all computer laboratories, faculty and staff computer assets, UNIX/Linux/Windows/VMware/XenServer servers, networks, and multiple Web sites. 2002-Present, Full-time
Manager of Client Services, Computing and Network Services; responsible for managing staff and assets including university Web site, all computer laboratories, Novell networks, and Helpdesk services. 1997-1999, Full time
Manager, Instructional Multimedia Center; conducted faculty training seminars, provided support for university faculty use of multimedia presentation tools and World Wide Web in an instructional environment. 1995-1997, Full time

United States Navy
Operations Officer for a 10 aircraft Anti-Submarine Warfare helicopter squadron. Managed over $130 million worth of aircraft assets with 99.5% utilization of available resources. Acted as Commanding Officer in his absence. 1991-1992 Full time
Information System Security Officer, Security Manager, and Information Systems Manager; responsible for acquisition, management and security of computer assets, and direction of physical and document security programs for Helicopter Antisubmarine Squadron (Light) 31. 1988-1990, Full time
Aviation Detachment Officer-in-Charge of a single aircraft unit operating entirely detached from the parent unit including two periods supporting hydrographic survey operations in Indonesia, and a circumnavigation of South America conducting anti-submarine warfare and anti-surface warfare joint operations with local navies. 1986-1991, Full time
Student Control Officer (equivalent role to Dean of Students/Academic Dean) for Navy Advanced Undergraduate Helicopter Pilot Training; instructed advanced helicopter students both in the cockpit and in the classroom. Coordinated all postgraduate assignments; arranged and conducted all graduations; managed student grading standards. 1983-1985, Full time

Certifications
CompTIA iNet+

Current membership in professional organizations
Association for Computing Machinery + SIGITE and SIGUCCS
Association of Information Technology Professionals
Information Systems Audit and Control Association
The Internet Society
Internet Corporation for Assigned Names and Numbers
Professional Member, Gamma Nu Eta - the National Information Technology Honor Society

Honors and awards
Instructor of the Year, IIT School of Applied Technology, 2012
Professional Member, Gamma Nu Eta - the National Information Technology Honor Society, 2011

Service activities
Illinois Institute of Technology
Member, NCA Accreditation Advisory Committee, 2011-Present
Faculty Adviser, Beta Chapter, Gamma Nu Eta IT Honor Society, 2011-Present
Member, Undergraduate Studies Committee, 1992-1994, 2010-Present
Faculty Advisor, IIT ACM Chapter, 1996-1999

Industry/Community
Computer Information Systems Advisory Board, Triton College, 2015-Present
Chair, National Board, Gamma Nu Eta 2012-2014; Board Member 2012-Present
Computer Information Systems Advisory Board, College of DuPage, 2008-Present
Computer Internetworking Technologies Advisory Board, College of DuPage, 2008-Present
Chair, Honors IT Advisory Board, Daley College, 2004-2006
Founding Member, Council of the World Wide Web Virtual Library, 1999-2005
Association of Internet Professionals Certification Accreditation Council, 1999-2003

Publications and presentations
Presentation: “Virtualization and Cloud as Disaster Recovery Solutions”, ForenSecure 2012, IIT Rice Campus, April 19, 2012
Presentation: "Law Enforcement Override of Unmanned Autonomous Logistics Vehicles (Pulling over a Robottruck)", ForenSecure 2015, IIT Rice Campus, April 17, 2015
Faculty Vitae of Kevin D. Vaccaro

Education

Business Essentials and Management Certificate; Loyola University, Chicago, Illinois 2011
Master of Information Technology & Management (4.0 GPA), Illinois Institute of Technology, Chicago, Illinois 2004-2006
A.A.S. Electronics – Honors Graduate, Devry University, Chicago, Illinois 1990-1992
B.A. English Language & Literature, University Chicago, Chicago, Illinois 1984-1988

Academic experience

Tenured Faculty, Instructor, Moraine Valley Community College, Palos Hills, Illinois, 2012-present
Lead Instructor in Cybersecurity area overseeing curriculum and adjunct faculty. Teach curriculum for Digital Forensics, Ethical Hacking and Linux courses.

Adjunct Industry Associate Professor, Illinois Institute of Technology 2006-Present
Instruct undergraduate students in across several courses: Networking Applications & Operations, Introduction to Networking, Computer Forensics, Vulnerability Analysis & Remediation, Network Security and Network Security Special Projects. Responsible for lesson plans, activities and exercises that encourage growth in critical thinking, research and technical literacy skills.

Non-Academic Experience

University of Chicago, Chicago, Illinois 1990-2012
Director, Distributed Departmental Support & Solutions Center 2006-2011
University of Chicago NSIT General Services
Core member of the IT management team, providing leadership and direction or a team of 24 technical services employees. Scope of responsibility included all cross-organizational projects and broad university strategic initiatives to achieve completion/outcomes within time, cost and quality parameters.

Associate Director, Administrative Desktop Systems 2000-2002
University of Chicago NSIT General Services
Manage several divisions within the Field Support & Administrative Desktop Systems group: Hardware Service/Support; Leasing/Fee-Based Support; Administrative Desktop Support.

Director, Field Support / Associate Director, Administrative Desktop Systems 1999-2000
Assistant Director, Hardware Support
University of Chicago NSIT Desktop & Personal Computing
Oversight of multiple divisions: Desktop Support, Hardware Service and Leasing/Fee-Based Support, with responsibilities similar to those described above. Orchestrated multi-tier desktop and PC support to many users, including daily help desk operations while supervising and delegating workload to technicians.
Manager of Service                  1994-1999
Assistant Manager of Service       1992-1994

University of Chicago NSIT Desktop & Personal Computing
Spearheaded the budgeting, acquisition, implementation, training and ongoing
maintenance/support of desktop and personal computing systems throughout the university.
Responsible for developing cost models, managing parts inventory, hiring new staff,
evaluating IT vendors and coordinating technical support and user services.

Field Engineer                      1990-1992

University of Chicago NSIT Desktop & Personal Computing
Repaired a variety of computers and printers, both in-house and on-site, while providing technical
support and user services to university students, staff and faculty. Trained new technicians in the
repair and service of new and existing hardware, software and peripherals.

Certifications
- CEH v.8
- FTK MPE
- CompTIA Net+
- LPI
- Cisco Certified Instructor

Certifications
- FTK ACE
- CompTIA A+
- CompTIA Security+
- Palo Alto Certified Configurator
- IEEE Member

Publications and Presentations
- “Mobile Device Forensics”, HiTec Conference, Chicago IL
- “Scripting for Security”, 3CS Conference, Palo Hills IL
- “Teaching Ethical Hacking”, Cisco Conference, Palo Hills“
Appendix C – Equipment

Please see Criterion 7 for a comprehensive list.
Appendix D – Institutional Summary

1. The Institution

Illinois Institute of Technology
3300 South Federal Street
Chicago, Illinois 60616

Chief Executive Officer: John L. Anderson, President
Prior to the site visit, the Chief Executive Officer will be Alan W. Cramb, President
(Dr. Cramb is currently the Provost of the university)

Person submitting report: Ray Trygstad, Illinois Institute of Technology, Department of Information Technology and Management, 10 W. 33rd Street, Chicago, IL 60616, 630-447-9009 trygstad@iit.edu

Accreditation: Illinois Institute of Technology has had continuous accreditation from the North Central Association of Colleges and Schools since 1941; the last accreditation visit was in 2006.

2. Type of Control

Illinois Institute of Technology is an independent non-sectarian, co-educational, urban university. It is governed by a board of trustees drawn from diverse groups representing the public interest.

3. Educational Unit

The Department of Information Technology and Management at IIT is part of the School of Applied Technology which reports to the Provost, who reports to the President of the University.
4. Academic Support Units

The Department of Applied Mathematics teaches required courses in discrete mathematics, probability and statistics, and various math electives. The department head is Dr. Fred Hickernell, Professor.

The Department of Biological and Chemical Sciences teaches general education elective science courses in biology and chemistry. The department head is Dr. M. Ishaque Khan, Professor of Chemistry.

The Department of Civil, Architectural and Environmental Engineering teaches general education elective courses in Engineering Graphics. The department head is Dr. Gongkang Fu, Professor of Civil and Architectural Engineering.

The Department of Humanities teaches general education elective courses in humanities. The department head is Dr. Maureen A. Flanagan, Professor of History.

The Department of Psychology teaches general education elective courses in the behavioral sciences and statistics. The department head is Dr. Ronald S. Landis, Professor.

The Department of Physics teaches general education elective courses in astronomy. The department head is Dr. Grant B. Bunker, Professor.

The Department of Social Science teaches general education elective courses in the social sciences. The interim department head is Dr. Maureen A. Flanagan, Professor of History.

The Undergraduate Program in Business of the Stuart School of Business teaches general education elective courses in economics and business statistics. The Director of Undergraduate Programs in Business is Dr. John R. Twombly, Clinical Professor of Accounting and Finance.

The IPRO office teaches the interprofessional project courses. The IPRO Director is Dr. Jeremy Alexis, Senior Lecturer.

5. Non-academic Support Units

Academic Resource Center (ARC)

The Academic Resource Center (ARC) is Illinois Institute of Technology’s primary teaching and learning center on the university’s Main Campus in Chicago. Its mission is to provide students with the resources necessary to achieve academic excellence through student-centered learning. The ARC supports many required undergraduate courses in Mathematics, Physics, Chemistry, Engineering, Architecture, and Psychology.

The ARC staff includes fifty undergraduate and six graduate ARC Scholars who are among the brightest and most motivated students at IIT. Each ARC scholar must be either a junior, senior, or graduate student with an overall GPA of 3.5 (or higher), and a faculty recommendation. ARC Scholars are chosen through a two-tier interview process to evaluate their academic and tutoring ability. Every year we hire new ARC Scholars (tutors). While all our tutors are high-performing
students and must pass a demanding interview process, not all have a background in peer tutoring and pedagogy and all must be individually trained.

The Academic Resource Center at IIT is committed to fostering intellectual growth and academic achievement among our students. The ARC emphasizes peer tutoring, interactive group learning experiences, and technology-supported education in a warm, inviting, and collegial environment where students can learn and study at their own pace. In addition to its tutoring services, the ARC provides a space for students to engage in peer tutoring, to gather for informal group study sessions, to work on course projects, and to fulfill their computing and printing needs. The ARC markets its services to student groups and at freshman orientation and presentations at a number of freshmen and sophomore classes during the first couple of weeks of school and mid-term to increase student awareness of ARC resources. These initiatives have made a noticeable difference in the number of students using the Center each semester as well as during the summer session. In 2009, the Center hosted 9,156 visits by 1,023 students; this year, the ARC had a record 11,972 visits by 1,449 students.

Tayyab Arshad is the ARC Director. He joined the staff in July 2008 as ARC Manager and was promoted to the position of Director in September 2010. He holds a BS in biology, as well as a Master in Education with a concentration in instructional leadership from the University of Illinois at Chicago. He brings many years of experience working in learning centers, including five years as a coordinator in sciences in the tutoring center at Triton Community College. While at Triton, he facilitated supplemental instruction, in-class tutoring and other group activity programs to increase student visits for the tutoring center.

Hassan Killidar is the ARC Manager. He joined the staff in August 2011. While obtaining his bachelor of science from Loyola University, he worked full-time as a bank manager. He also received a Medical Diploma in June 1999 from Poznan University of Medical Sciences. He has been an adjunct faculty member in the Science Department at Triton College since 2007. Hassan brings managerial and teaching experience to the Center.

Career Management Center
The Career Management Center (CMC) at the Illinois Institute of Technology serves the critical function of providing the linkage between students and graduates with local, national and international employers. The CMC's mission is to engage students and alumni to develop and practice lifelong career management skills to realize their career goals. Students are strongly encouraged to register with the CMC during their freshman year in order to begin developing their careers as soon as possible. The CMC also seeks to develop lasting partnerships with employers by providing employers with the opportunity to participate in key programs to identify and hire skilled, technically-prepared individuals. The Director of CMC is Andres Garza, and the CMC has a professional staff of eight.

CMC Programs
- Resume Development: The CMC provides workshops and one-on-one advising on resume writing throughout the year. Resumes, once approved by an adviser, may be posted on Jobs4Hawks, where they are made available to potential employers.
• Professional Development Services & Workshops: The CMC provides a wide variety of services and workshops to help students develop professionally. The services include one-on-one career advising with a Career Counselor who specializes in the student's field, mock interviews, and resume and cover letter critiques. Workshops include Resume and Cover Letters, Interviewing with Confidence, Internships and Coops, How to Work a Career Fair, Researching Your Industry, LinkedIn, Job Search Strategy, 30 Second Elevator Pitch and Negotiating Your Offer. Two-hour Boot Camps are conducted during the summer for students still looking for work.

• Resume writing and an invitation to use CMC services are extended to new students in many of the Intro to the Profession 100 level courses. The staff makes numerous presentations tailored to the needs of student organizations or in classrooms upon the invitation of faculty. The CMC also works with other campus units to make students aware of scholarship and special opportunities to enhance learning.

• Cooperative Education & Internship Programs: The CMC provides monitoring and administrative services for students in approved Cooperative Education & Internship positions. Assistance in obtaining Curricular Practical Training (CPT) Work Authorization for these positions is also provided to international students by the CMC in partnership with the International Center.

• Student Employment Office: The CMC operation also includes assisting campus units in identifying, hiring and paying students for on-campus positions. These student employees allow campus units to maintain essential services while providing students with an opportunity to earn some money and develop their professional skills.

• Recruiting Events: IIT Career Fairs are open to all local, national and international employers seeking quality hires from all disciplines. The Illinois Institute of Technology is a prime institution targeted by many employers and sponsors 2 major career fairs attended by more than 1,500 students. In addition, The CMC sponsors two Career Connections Networking Events each school year, employer information sessions, Etiquette Dinners, and many other events for employers to interact with students.

• On-Campus Interviewing: On-Campus Interviewing (OCI) is a program allowing employers can use to interview and hire IIT graduates, alumni, and undergraduates seeking full-time, co-op or internship positions on IIT’s campuses. The Career Management Center holds OCI during the fall and spring semesters.

• Jobs4Hawks: Students submit resumes and cover letters to be reviewed and approved by CMC career advisers. Employers may post job listings, schedule on-campus interviews, request resume books, and search through student resumes for candidates meeting the criteria for their open positions. The system allows the CMC and employers to communicate with students about recruitment events and opportunities.

• Tracking Reports: The CMC tracks graduating students' progress in finding employment or enrollment in post-graduate programs, and provides a regular updates and a year-end report to the campus units.

• Web Site: The CMC maintains a comprehensive web site with online resources for students, alumni and employers at www.cmc.iit.edu
**Director of Academic Advising**  
The Director of Academic Advising is Matthew Bauer, bauerm@iit.edu. His responsibilities include:

- training and assisting all undergraduate faculty advisors (new and ongoing) about both technical advising systems and processes
- organizing and executing new undergraduate student every summer and winter break. This includes a custom, online new student advising application for faculty and students
- implementing the campus wide early warning system targeted at collecting poor performance and poor attendance data on undergraduates (mostly first year) and sharing with academic and non academic advisors for intervention
- managing the academic standing review process at the end of every term
- assisting the registrar and UG Academic Affairs with notifying students (and faculty advisors) about probation requirements, course retakes, and graduation checkout

**Galvin Library**  
Details in Criterion 7. Sharon Bostick, Dean of Libraries

**Humanities Writing Center**  
Individual assistance for writing assignments is available in the Humanities Writing Center, which provides guidance with assignments in engineering, science, and technical communication courses as well as courses in the humanities (literature, history, art & architecture history, philosophy) and social sciences.

One-on-one instruction focuses on the specific needs of the individual student. Typically, a student takes a project or paper assignment to the Writing Center, where a faculty tutor assists with the writing process:

- by helping to interpret the goals and requirements of the assignment
- by guiding the processes of information gathering, analyzing, evaluating, synthesizing, organizing, and documenting
- by helping to address "local" issues such as grammar, punctuation, spelling, conventions of typing, etc.

The Writing Center is opened five days a week, Monday through Friday, with a typical daily schedule of 9 am to 4 pm. Weekly student sign-up sheets were posted on the faculty offices of Siegel Hall, Rooms 232 and 233, allowing visitors to make their own appointments. Most appointments last from one half to one hour. Students may bring in any form of writing, from an undergraduate first-year composition assignment to a PhD project. See below for current attendance records.
There is one permanent staff member: Prof. James Dabbert, Director, IIT Writing Center.
Interprofessional Projects (IPRO) Program Office
The IPRO Program Office is responsible for administering and coordinating all aspects of The IIT Interprofessional Projects (IPRO) Program. This office was established in 1995 in order to plan for and eventually implement the general education requirement that all undergraduates complete two interprofessional project courses in order to graduate, with each course representing three credit hours. There are two prominent functions that achieve this result:

1. Since the interprofessional course, by design, serves all undergraduate disciplines and programs, the IPRO Program Office has the responsibility to coordinate and integrate faculty, sponsors and students in order to identify, organize, promote, implement and assess on the order of 150 IPRO project teams each year, organized through about 60 IIT IPRO course sections available for registration, so that our students can fulfill their interprofessional project requirement. This serves on the order of 1,500 students each year (producing on the order of 4,500 credit-hours), with an average team size of ten students from any level (sophomore through graduate) and any discipline and professional program at IIT, although the vast majority of students have junior or senior standing. The disciplines involved across all IPRO course sections encompass all undergraduate degree programs: applied mathematics, architecture, business, computer science, engineering (aerospace, architectural, biological, biomedical, chemical, civil, computer, electrical, environmental, materials, mechanical), the sciences (biology, chemistry, physics), humanities (journalism, technical communication), industrial technology and management, information technology and management, math and science education, psychology and social sciences (political science). Graduate students may also participate and receive credit toward their degrees, depending on their field of study, including, in addition to those previously mentioned, law, design, and food safety and health.

2. Since the purpose of the interprofessional course is to provide students with experiences that emulate the workplace, an important aspect of the IPRO Program is the involvement of workplace organizations that identify viable “real world” complex topics, and provide financial support and professional advice to our IPRO teams throughout the semester. Approximately 20 percent of projects are sponsored, with many additional projects benefitting from informal collaboration with a range of business, non-profit, entrepreneurial and public sector organizations.

The roles and responsibilities of The IPRO Program Office are summarized as follows:
- Facilitate review and implementation of policies and procedures that define the learning objectives and govern the fulfillment of the two-IPRO project course general education requirement.
- Implement and maintain an efficient and effective system for creating, delivering and assessing project courses consistent with the learning objectives established for an interprofessional project experience.
- Develop and maintain sponsor relationships that are compatible with our faculty expertise and offer interesting and challenging learning experiences for our students, and that provide financial resources to help support the costs of coordinating and delivering the interprofessional project experience in a professional manner. This is facilitated via a standard IPRO Collaboration Agreement form that establishes expectations and outcomes.
for the IPRO experience and the right of students to retain intellectual property rights for concepts that they create through the IPRO course.

- Manage an operating budget and various grant and unrestricted donation accounts that support the delivery of the interprofessional course.
- Organize various events that support the learning objectives, including workshops (e.g., teambuilding, communication (written, graphical, oral), project management, innovation and design, ethical decision-making, business planning, technology commercialization, intellectual property).
- Organize and participate in various events that support the development and advancement of the interprofessional curriculum, including faculty orientation sessions, faculty development workshops and other education conference opportunities that help to promote information exchange between IIT faculty and colleagues at other institutions, particularly in the field of team project based learning modalities.
- Participate in open houses for prospective students, career fairs with recruiting organizations and alumni events, as well as give presentations to trustees, industry advisory boards, community organizations and visiting academic colleagues.
- Coordinate midterm and final reviews of IPRO team progress and accomplishments that provides a venue for all IPRO teams to present their work via formal oral presentations, and includes an evaluation process (with working and retired professionals, faculty members and graduate students) that is linked to assessment of learning objectives.
- Coordinate the end-of-semester IPRO Projects Day (held three times each year) that provides a venue for all IPRO teams to present their work via interactive exhibits, and includes an evaluation process (with working and retired professionals, faculty members and graduate students) that is linked to assessment of learning objectives, and offers a showcase event for IIT alumni, trustees, sponsors, employers, high school and junior high school students, parents of IIT students and prospective students, and the general public.
- Support the information needs of and be responsive to the Undergraduate Studies Committee to provide academic oversight of the IPRO course.
- Coordinate the IPRO proposal review process each semester that leads to the review of candidate IPRO projects for the subsequent semester, with on the order of half of the IPRO projects continuing and half new each semester.
- Identify and encourage the use of best practices by IPRO instructors that have value in enhancing the effectiveness of IPRO teams (e.g., peer evaluation, grading guidelines (team performance and individual performance on the team) and establish an agreement with faculty members who serve as IPRO instructors concerning the expectations of the IPRO Program for their role and responsibility.
- Encourage academic units and faculty to collaborate across disciplines and programs, recognize innovative approaches and support scholarship, publication and presentation at national conferences.
- Encourage graduate students to participate on interprofessional project teams and seek ways to adapt the IPRO course model to support graduate research and commercialization activities across professional boundaries and build competency of graduate students to team teach and teach in teams.
- Offer three IPRO learning platforms that serve the needs of students from a diversity of backgrounds and interests, including the traditional single-topic IPRO team project, the
multi-IPRO themed cluster (with such themes as STEM education innovation, new ventures, urban agriculture, community engagement and urban infrastructure innovation), and the interprofessional by design workshop format.

- Integrate and coordinate the process for students to enroll in interprofessional courses as part of the regular course registration schedule and provide timely information about IPRO course topics at http://ipro.iit.edu, giving particular attention to constraints that help to control the size of the team and the mix of students from various disciplines on a team.
- Provide a syllabus template that offers a generic framework and semester schedule for IPRO instructors to use in planning and implementing an IPRO project course.
- Coordinate IPRO team tools that facilitate communication and recordkeeping, including http://igroups.iit.edu and http://iknow.iit.edu.
- Coordinate the submittal and review of appropriate deliverables by IPRO teams, such as: project plan, mid-term review, project video, final oral presentation, exhibit/poster, abstract, final report and team work product.
- Coordinate surveys and evaluation tools that provide feedback to the IPRO Program Office from students, faculty, sponsors and alumni.
- Provide support to IIT colleges that facilitate the assignment of IIT faculty members to serve as IPRO instructors as part of their regular teaching load, support part-time IPRO instructors who offer specialized expertise and capacity and support IPRO team expenses on an as-needed basis.
- Encourage student and faculty ideas for new venture IPRO projects that meet all of the requirements of a typical interprofessional project and encompass venture development and opportunity analysis that can lead to a business plan, prototype and user testing.

Contact: Jeremy Alexis, IPRO Director & Senior Lecturer, Institute of Design

Office of Technology Services (OTS)
In addition to the classroom, campus and computer lab technology listed in Criterion 7.

*Banner*
All administrative services that support the university’s academic activities use the well known Banner system. IIT supports the myIIT portal allowing our faculty and students to register to classes, apply for financial aid, post and review grades and all other activities using the self-service portal. These services are available 24x7x365.

*Blackboard*
The number of courses utilizing the Blackboard learning management system continues to increase. The Blackboard system hosts a website for every course offered at IIT and serves as a portal to IIT Online streaming media, which can be accessed by students in both online and live course sections. Instructors post notes, lectures and assignments on the course page, which also features a discussion board and chat room.

In 2013 OTS upgraded Blackboard to the latest release, Blackboard 9.

Leadership: OTS operates under the direction of Ophir Trigalo, Chief Information Officer
Retention Task Force
The University Retention Task Force (RTF) is committed to improving students’ overall experience at the Illinois Institute of Technology (IIT). The task force is taking on the responsibility of increasing student retention to 90% and above.

IIT recognizes the need for departmental collaboration to provide excellent service to our students. Therefore, IIT convened a task force to increase student retention and start a community. Since its start in 2006, RTF has implemented a number of programs. These programs include: enhancing the relationship between students and faculty advisors, Summer Orientation, Early Warning System, DegreeWorks and many more. Our goal is to increase 6 year graduation rate to above 75%. Since the formation of University Retention Task Force first year student retention rates have increased by almost ten percent. This increase is also shown in the undergraduate student graduation rate. These achievements clearly show the effects of retention task force which started in 2006. We have set high benchmark for the university and students. Every year the task force focuses on a particular cohort or department or a university office to improve communication and assessment through various surveys such as, National Survey of Student Engagement (NSSE), Student Speak Survey (SSS) and others targeting a specific group of students.

Student Health & Wellness (SHWC)
The goal of the SHWC is to provide campus health and wellness resources that enable the student to successfully achieve their academic goals and promote lifelong wellness. To achieve this mission we:

- Address primary medical and psychological health needs.
- Provide a quality standard of primary medical, gynecological, and mental health care for Illinois Institute of Technology students, with sensitivity to age, gender, disability, religion, culture, ethnic background, and sexual orientation.
- Provide quality support for health care through laboratory, insurance, secretarial, and referral resources.
- Provide health education to prevent illness, to teach self-help strategies, and increase awareness of potentially unhealthy practices so that students may choose their optimal healthy lifestyle.
- Empower students through education and professional guidance to become self-directed and well-informed consumers of health care services.
- Adhere to established ethical principles and codes of professional practice, including patient confidentiality, privacy, dignity, and informed consent.
- Provide an environment of caring with a non-judgmental approach, to maintain an atmosphere of mutual respect, and to uphold and protect our patient’s rights in the process of health care delivery.
- Participate in the teaching of psychology externs, and collegiate nursing students to stimulate intellectual and clinical excellence in the care of our patients.

Student Success Committee
The Student Success Committee (SSC) is comprised of representatives from Undergraduate Academic Affairs, Financial Aid, Residential Services and Greek Life, International Center, Academic Resource Center, Student Accounting, University One Stop, and Student Access,
Success, and Diversity departments. Other administrative and academic offices are invited to attend meetings as necessary to add perspective on issues or individual student cases.

The committee reviews referred student cases to provide solutions without numerous “hand-offs” or delays. Using a holistic approach, the committee can review all aspects of the student experience including academic performance, personal wellbeing, and even financial obligations, to provide the best outcome for each student. These solutions have helped guide students academically, improved academic performance, assisted students struggling financially, and helped students graduate.

Specifically, the committee has increased retention rates by reviewing and contacting non-registered students through consistent outreach and review. Based on student feedback, the committee has been instrumental in helping students succeed by offering solutions to help them achieve their educational goals.

6. Credit Unit
One semester credit hour represents one class hour or three laboratory hours per week. One academic year represents 30 weeks of classes, exclusive of final examinations. One semester hour represents 50 minutes of lecture or 100-150 minutes of laboratory per week. One academic semester year entails thirty weeks of classes, exclusive of final examinations.

7. Tables
Complete the following tables for the program undergoing evaluation.
### Table D-1. Program Enrollment and Degree Data

Department of Information Technology and Management, Illinois Institute of Technology

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Enrollment Year</th>
<th>Total Undergrad</th>
<th>Total Grad</th>
<th>Degrees Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
</tr>
<tr>
<td>Current Year</td>
<td>FT</td>
<td>PT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014-2015</td>
<td>12</td>
<td>0</td>
<td>45</td>
<td>37</td>
</tr>
<tr>
<td>2013-2014</td>
<td>5</td>
<td>19</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>2012-2013</td>
<td>9</td>
<td>10</td>
<td>20</td>
<td>46</td>
</tr>
<tr>
<td>2011-2012</td>
<td>6</td>
<td>6</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>2010-2011</td>
<td>5</td>
<td>7</td>
<td>19</td>
<td>16</td>
</tr>
</tbody>
</table>

Give official fall term enrollment figures (head count) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years. The "current" year means the academic year preceding the on-site visit.

FT--full time
PT--part time
Table D-2. Personnel

Department of Information Technology and Management, Illinois Institute of Technology

Year¹: Fall 2014

<table>
<thead>
<tr>
<th>Category</th>
<th>HEAD COUNT</th>
<th>FTE²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FT</td>
<td>PT</td>
</tr>
<tr>
<td>Administrative²</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Faculty (tenure-track)³</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Other Faculty (excluding student Assistants)</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Student Teaching Assistants⁴</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Technicians/Specialists</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Office/Clerical Employees</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Others⁵</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Report data for the program being evaluated.

1. Data on this table should be for the fall term immediately preceding the visit. Updated tables for the fall term when the ABET team is visiting are to be prepared and presented to the team when they arrive.

2. Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.

3. For faculty members, 1 FTE equals what your institution defines as a full-time load.

4. For student teaching assistants, 1 FTE equals 20 hours per week of work (or service). For undergraduate and graduate students, 1 FTE equals 15 semester credit-hours (or 24 quarter credit-hours) per term of institutional course work, meaning all courses — science, humanities and social sciences, etc.

5. Specify any other category considered appropriate, or leave blank.
Appendix E – External Program Review Committee Final Report

External Program Review Committee Final Report
School of Applied Technology
Illinois Institute of Technology

Background
At the request of the Illinois Institute of Technology Board of Trustees, an external program review committee was assembled to examine the School of Applied Technology (SAT), its academic programs, faculty, administration, staff, facilities and students. The committee was comprised of the following individuals:

- Andrea Berry (Chair), Senior Vice President, Broadcast Media Services, Fox Networks
- Dr. Charles Czuprynski, Director, Food Research Institute and Professor and Chair, Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin
- Dr. Robert Friedman, Professor and Director of the Institute of Technology, University of Washington Tacoma
- Dr. Barry Lunt, IT Program Coordinator and Professor, Brigham Young University
- Dr. James Mohler, Associate Dean of Academic Affairs & Diversity and Professor of Computer Graphics Technology, College of Technology, Purdue University

The committee was on the IIT campuses on April 1-2, 2014. The committee or parts thereof, visited with various faculty, students, administrators and staff and examined facilities at the main, Rice and Moffett campuses. This brief report summarizes the committee's review of the school and specific feedback pertaining to institutional alignment, administration and staff, programs, English as a Second Language (ESL), research, faculty, students, and facilities. The document concludes with a section on suggested future directions.

Executive Summary
The committee believes that the programs of the School of Applied Technology (SAT) are well aligned with both the IIT mission and the needs of the industries they support. While there are areas for improvement and realistic threats that should be addressed, these are far outweighed by strengths and opportunities for the school and the IIT. The faculty, staff and administration should be commended for their ongoing efforts to form and organize the new school. The current programs are sound and have various avenues for growth and expansion. These impressions are supported by the materials and data provided to the committee, as well as the numerous interviews with administrators, faculty, and students that occurred during the two day visit to the three campuses and their facilities.

Institutional Alignment
- Creation of the SAT was insightful; the school significantly contributes to the IIT institutional mission and the employment needs of industry.
- The planned Center for Innovation seems to be an important part of IIT activities. The SAT also sees it as critical to their current and future mission.
- The SAT has the potential to serve as a hub or connector to many other disciplines at the IIT. It has the potential to synergize with several other programs on campus and is in a unique position amongst the other schools at the IIT.
Programs
Overall, each of the following programs is highly relevant to the needs of industry. All programs have high student placement rates and the overall average starting salary for SAT graduates is in-line with institutions having similar programs. All programs also appear to be profitable and benefit the IIT overall.

Industrial Technology and Management (INTM)
- A unique aspect of this program is that it assists working professionals to advance in their careers.
- The program has beneficial relationships with the City Colleges of Chicago, community colleges and professional organizations such as unions.

Information Technology and Management (ITM)
- The program’s strength is in the high demand area of forensics and cybersecurity.
- Due to the number of online courses offered (and the quality of them) there is a great opportunity for ITM to become nationally recognized.

Food Science and Nutrition (FdSN)
- The M.S. program hits a sweet spot for which there are few competitors nationally and internationally.
- There is an opportunity for FdSN to develop a high-quality, in-demand bachelor’s degree.
- Development of a Ph.D. program can be initiated with limited input and will increase the visibility of the FdSN program.

Office of Professional Development
- The ESL program is an important part of the Office of Professional Development activities. The current success of the ESL program, in part, derives from its being housed in a school such as the SAT, one that seeks to serve and collaborate with other academic units, has a broad vision, and has deep experience in providing a practical approach to English language remediation. If the program continues to be successful (and/or grows), the institution should be cautious about moving ESL out of the SAT.

This concludes the executive summary. The remainder of this document describes specific strengths, weaknesses, opportunities and threats related to each of the specific areas.

Specific SWOT Details
Administration and Support Staff
- Strengths
  o The support staff has much energy, passion, and many creative ideas. It is obvious that they function well as a team. It is likely they are the proverbial glue that holds together the SAT. The same behaviors are modeled and supported by the present dean.
  o The administrative staff serves as advisors to the students. The staff seems very flexible in doing what needs to be done. They demonstrate outstanding understanding of the programs, processes and procedures necessary to help students make degree progress.
  o Dr. Robert Brackett brings a unique set of experiences and skills to bear to the food program and is very well regarded within the food industry.
• **Weaknesses**
  
  - At many institutions, academic advising is done by professional staff that wholly focuses on advising. If significant growth occurs, having advising done by so many people – particularly faculty – may be a limiting factor to managing the growth and maintaining a high level of service and quality.
  
  - Quality and upkeep of the physical buildings was addressed as a major weakness. Restroom facilities, stained ceiling tiles, and other general maintenance items do not contribute to an environment that is aesthetically pleasing or inviting to prospective students, families or alumni.

• **Opportunities**

  - There are significant opportunities for growth in the programs and school.
  
  - Obtaining NCA accreditation, which will allow the institution to handle I-20 processing, should lead to even greater growth in the ESL program.
  
  - The SAT is in the process of hiring a dedicated recruiter that should help increase the visibility of the school’s programs and ultimately the number of qualified applicants and admits to the programs. This person would also serve as a liaison to the department of admissions.

• **Threats**

  - Dr. Robert Carlson, Dean of the SAT, carries a great number of titles and responsibilities. Is there a succession plan? What is the impact if there is significant growth in SAT programs (in which these responsibilities grow)?
  
  - Potential program growth could overload the infrastructure and personnel resources available. They already appear to be stretched thin with several people wearing multiple hats. The people involved seem to handle this well, but there is a limit to the number of tasks people can perform effectively.

**English as a Second Language (ESL)**

• **Strengths**

  - The ESL program is profitable and opens the door to other academic offerings within the SAT and the IIT as a whole.
  
  - Although ESL could be seen as an odd fit in the SAT, the leadership of the SAT has integrated it well and turned the program into a strength for both the SAT and the IIT.
  
  - Students spoke very highly of the program. Its existence in the SAT makes learning more relevant (and likely more motivating) for the students.

• **Weaknesses**

  - None noted or observed.

• **Opportunities**

  - If the institution becomes NCA accredited and able to grant I-20 visas, the program could grow substantially.

• **Threats**

  - Unmanaged growth could be a significant threat (i.e., the quality of the program could decrease; individuals could be over-tasked) if not adequately staffed.
Research

- **Strengths**
  - The Moffett Center and the FDA funding are strengths for the college, as are the IFSH faculty who have a proven track record of garnering research funding.
  - The FdSN M.S. program is an asset that should contribute to a greater number of publications and/or grant proposals.

- **Weaknesses**
  - Industrial Technology and Management (INTM) and Information Technology and Management (ITM) have not historically participated strongly in research. This will need to change over time so that they become equal partners in the SAT and the institution as a whole.

- **Opportunities**
  - As INTM and ITM faculty participate more fully in the research enterprise, the overall profile of the SAT will increase.
  - There is an opportunity to raise the visibility of the SAT through graduate projects and graduate honors programs.
  - Within Food Science and Nutrition (FdSN), there is an opportunity to increase the faculty’s portfolio of research funding from industry and governmental agencies.

- **Threats**
  - There needs to be a consistent definition of research productivity and associated expectations. Without that, attracting faculty and faculty progressing through the tenure/promotion process will be difficult.
  - The FDA decision to not fund the nutrition program of FdSN is a challenge to that group. This increases the importance of pursuing and securing extramural funding.
  - The highly competitive environment for federal funding overall is a challenge to all programs and units.

Faculty

- **Strengths**
  - Adjunct faculty are very dedicated and qualified; they teach highly relevant content in the classroom; they are highly respected by students. Teaching excellence is evident based on teaching scores and they appear to be managed very well – they feel well connected and well respected.
  - The industrial experience of the faculty is a huge asset – and the guest lecturers (mentioned by faculty, leadership, and students) – are a unique and positive aspect of the SAT’s programs and courses.

- **Weaknesses**
  - There is an urgent need for more tenure track faculty in most of the SAT programs.
  - There is a lack of defined expectations for tenure track faculty (the balance amongst undergraduate teaching, research and service).
  - Marketing was acknowledged by the faculty as a significant problem. The IIT as an institution is relatively unknown within Chicago and beyond. The SAT and its programs are similarly unknown as widely as they should be. “IIT is a well-kept secret.” Branding and the identity of who the IIT is not well known.
• **Opportunities**
  o Faculty mentioned several areas that could be potential content areas that could be added as programs, concentrations or other programmatic aspects. These include: sustainability, environmental issues (grand challenges), resource management, and global impact issues.
  o The IIT may want to consider finding ways to connect programs across campus through seminars, talks, etc. around broad themes (e.g., computing, engineering, science, management) that would draw faculty and students from traditional and non-traditional schools to create connections and spur synergies. IPRO could also be a vehicle to garner such connections. An indirect effect of this effort may be breaking down traditional barriers across disciplines or schools.
  o There is an opportunity to improve the relationship between ITM and the Board of Overseers.

• **Threats**
  o Finding qualified tenure track candidates may be a challenge for some programs.
  o As tenure track faculty are added, political issues may arise (adjunct versus tenure track faculty).

**Students**
• **Strengths**
  o Things that draw students to the SAT include: the city of Chicago, the reputation of the programs, the fact that faculty are industry professionals (both knowledge and the faculty’s networks). The students represent the institution and their programs very well. The students felt that the programs and faculty were personable, down-to-earth, and accessible.
  o Special connections to organizations such as the IBEW, the FDA, and the food industry in general were specifically noted by students.
  o Global partnership programs (such as the agreement with Spain) were perceived as highly valuable. A draw for international students are programs such as these that allow them to remain and work in the U.S. under OPT and CPT programs.
  o Several students noted that the student organizations (CSCN groups) help them connect with one another and with the industry as a whole.
  o Students receive very good advising (both professional and academic) before and during their time here.

• **Weaknesses**
  o Students said the career fairs and the Career Management Center did not really help them or include them. The best information and opportunities comes through the school and/or faculty and staff in the departments. The software ("Nacelink") used at the Career Management Center could be greatly improved.
  o Students acknowledged that the video quality of the online materials were sometimes poor. The resolution of the video as well as the syncing of the audio and video were often lacking. Students also suggested that they would like to have
access to online course materials beyond the end of the semester that they took the course.

- Students would like to be exposed to a wider range of industry tools. A specific example was that they were taught Oracle but would like to also learn Microsoft IIS or mySQL. Another example was the opportunity to learn CISCO technologies. Students suggested that the institution may be able to garner access to online materials or other things (certifications) that students could use to supplement their learning on their own.

- **Opportunities**
  - Development of undergraduate and Ph.D. food science programs.
  - Accreditation of the ITM program by ABET CAC could benefit the programs, students and their reputations.
  - ITM is an acknowledged Center of Academic Excellence in information assurance and cybersecurity, which allows application to the National Science Foundation (NSF) for Scholarship for Service funding. This funding could greatly benefit students, reduce cost of attendance, and provide career path options.

- **Threats**
  - Competing for jobs with graduates in the Chicago and northern Illinois region.

**Facilities**

- **Strengths**
  - The IFSH has strong facilities with unique capabilities. The Moffett campus pilot plants offer opportunities that few can match.
  - The Clinical Nutrition group is well positioned and has a very nice facility. They have the potential to be a draw both for students and collaborative research.
  - The Rice building has two very well provisioned labs, one for telecommunications work and another for cyber forensics. The faculty leading the labs have deep knowledge and influence in their areas of expertise.
  - The way that SAT has structured their online recording facilities for distance education has likely strengthened both the online experience as well as the on-campus experience (because on-campus students have access to the recorded online materials). Students have access to materials in multiple learning modes for different learning styles.

- **Weaknesses**
  - The IFSH pilot plants (i.e., BSL3) are a high cost item but offer extraordinary opportunities.
  - Having the food science students take classes on the main campus but go to Moffett for the microbiology lab is not optimal.
  - Space constraints are a problem, as is the aged nature of the available buildings.
  - The Rice building has no basement and limited storage, which is very constraining.

- **Opportunities**
  - IFSH has a large pilot plant area (Moffett campus) that has great potential, but it is outdated (equipment, building infrastructure) and would need significant refurbishment to modernize it. This is a potential fundraising item.
  - The Rice campus seems to have a lot of potential space for expansion.
IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

- Threats
  - The space constraints on main campus may be a hindrance to the probable growth of the program.
  - Balancing programs across the various campuses seems to be a challenge.

Future Directions
- Adding new tenure track faculty to the SAT is an imperative, particularly in light of the significant growth potential that the committee believes is imminent.
- There needs to be a succession plan developed for the dean of SAT, who has multiple responsibilities.
- If growth occurs (students and faculty) as the committee suspects, there may need to be a delegation of tasks and responsibilities by the dean to assist with that growth.
- A decision needs to be made about the future of the Rice campus and how it will be utilized.
- To assist the faculty in being more effective with grant writing and grant productivity, the SAT may want to consider using short-term consultants to conduct training on grant writing or sending faculty to grant writing workshops that are offered nationally. Faculty may need to be briefed on the services offered at IIT, such as the Office of Sponsored Research.
- The institution should invest in marketing and branding within the Chicago area, as well as nationally.
- The Office of Institutional Advancement should begin developing relationships with the alumni base of the SAT. Although the school is new, some programs with graduates have existed for as long as 17 years. Development-oriented relationships should be started immediately with alumni. Efforts should also focus on corporate and industrial donors who need to be made aware of the new school’s efforts and the graduates who could be beneficial to their companies.
Appendix F – Representative Comments from University Student Critiques, Spring 2015

ITM 301 Introduction to Contemporary Operating Systems & Hardware I
- The course is supposed to prepare me to become A+ certified. I learned nothing. I learned everything I know regarding this course online. Nothing from the professor.
- A fun enough course to introduce students to computer hardware and software. The TestOut platform is good.
- The class felt very scattered and without much structure.
- really helpful class. things learned actually apply in real life

ITM 311 Introduction to Software Development
- Good intro to Java.
- Lectures can be a little dry sometimes but overall fun.
- cool
- kinda demanding for a beginner course

ITM 312 Introduction to Systems Software Programming
- It doesn't make sense for the ITM curriculum to have 2 introductory programming classes. They are almost exactly the same except in different languages. ITM311 and ITM312 should be merged into one class.
- I learned a lot so I can't be too upset.
- material is not really clear

ITMD 411 Intermediate Software Development
- Dense course. Good. Wish I had more time to learn more.
- Learned about using Java for various menu driven programs.
- Course was great.
- Course covers many materials with in depth description and explanation provided from the professor himself and power points.
- There are a lot of software principles I see in this course that are relevant in a lot of development environments in the real world.
- This course provides a more in-depth look into Java programming. Even though this course is a requirement for ITM majors, this course is useful for those who want to delve further into Java after ITMD311 and ITM in general.
- Absolute necessity
- Course material was very good. Good transition from 311 class.
- cool
- covers very important topics of OOP that are not covered in other CS classes too

ITMD 415/515 Advanced Software Development
- Very useful course, much more interesting than I came in expecting. I have never experienced a greater hell than trying to debug a web framework.
- This course helped me understand JAVA EE. The professor showed real life examples which was very nice.
- A good and an extensive course, but it is a bit tedious for students who do not have previous work experience in Java and the only knowledge of Java they have is by the course 411 taken in previous semester. I feel now that 411 is replaced by 510, the level or coverage of topics must also be increased in 510 to bridge this gap.
- "This subject is way too lengthy and a bit of difficult, There should be more than (3 hours)1 class a week and should be extended to 2 classes. If we get more time to spend in the class we can explore more about the subject, but due to limited time was not possible."
- I am fully satisfied with this course and is highly recommended because it can help you bag a decent offer.
- Difficult and Advanced Course. Lots of preparation and homework required.
ITMD 421 Data Modeling & Applications
- "Curriculum thoroughly covers Oracle SQL and its components. Typos and errors in the curriculum are occasional. Some coursework could be more concise, understandable. Uses the professors personal SQL server which had some major issues. A database lab from IIT may work better for this purpose, especially if it was managed by the school's staff."
- The workload was big between labs, homework, quizzes, and the final project. I personally don't like SQL. Sometimes the class server was down when I needed to get work done.
- I have a high knowledge of Oracle Developer and Data Modeling thanks to my professor through teachings in class, after class and teacher hours.
- Lectures can get a little confusing and boring, but good class
- The problem with this class is that its both an online and offline lecture. Meaning, she lectures non-stop for the sake of the online viewers, at the expense of in-class interaction. Now, the professor does answer questions, and she's really chill about stopping to do that, its just that, i feel in-class students lose some of the potential effectiveness of the professor from this style.
- excellent teaching methods

ITMD 434 Human/Computer Interaction
- This really does not need to be a 3-credit course. It could and should have been much faster, or been much denser.
- Course seems to be specifically structured by teaching professor. Hit or miss topics are covered.
- Not really sure what I'm supposed to be learning in this class, it seems like a waste of time.
- Homework Vocab quizzes don't correlate to any information covered.
- This class is not very beneficial.
- Class hour is too long.
- AWESOME!!!
- Class was good for learning human computer interactions.
- The course provides useful information on how to develop well-detailed interfaces for human and computer interaction. The homework and labs expands on what the professor says and provide various insight into the subtopics of HCI. The only problem I can state with this class is how some of the homework and labs are outdated meaning certain instructions were unclear.
- This course is fantastic, the labs give you real hands on experience. The homework's also provide you with in depth knowledge on how to handle real life situations.
- In class we are always learning something new Data Modeling & Applications, while also keeping up with current events.
- Learned a lot from this class.

ITMD 455/555 Intelligent Device Applications (iOS)
- I really enjoyed the course material. The way this class was structured though made going to class somewhat pointless. A screencast could have been made to show the code that was done in class, however, the class examples came straight from the textbook anyway.
- Learn the basis of Swift, following the book.
- I thought learning a very recent technology would be awesome, but I realized it is hard to find good material and it is even very buggy. The course in general is being satisfactory.
- There really needs to be a prerequisite for this course, for OOP programming. Too much of the class was focused on very elementary programming, and not enough of Swift specifically, as its own language. This was specifically because the course was intended to integrate "anyone", but this just meant that it was extremely slow and I'm going to have to do a lot more work on my own in order to adequately program with Swift, because I only learned the most basic functionality that the language allows for.
ITMD 455/555 Intelligent Device Applications (android)

- The course is good, we learn a lot by the labs and the final project can be interesting.
- Very interesting. Students who already know Java would be well advised to review the android tutorials in lynda.com before taking this class. Things will make more sense that way.
- Very good labs with in-depth details for each.
- I had a great time in the course.
- I am doing this class online. At begining the video will go all the way to the end of the class. However the last 8 weeks, the video always cut short. I feel they shouldn't start the video that early. The first 10-15 minutes usually the professor was not doing anything. The professor tend to go over important stuff in the last 10 minutes, and the video always got cut right on the most important part of the class.
- "The professor is very nice. There is a high emphasis on the practice, which is good. But it would beneficial if the professor could give more instructions on how to use the textbook and details about some various ways to do things. The lectures aren't related to the textbook. And I was slightly confused when to read which chapter. During the classes, the professor normally teaches us how to do our labs, but it is also important to know why we should do it in this way, rather than how to do it in this way. And if we want to do them in other ways, how do we do that."
- Android application development is a really good area for ITM students to learn. This course should be provided in two sections, so that it isn't rushed.
- Mobile applications development is definitely a must know in today's technology world and this course provides good coverage of the android platform.
- Mr. Pappademas has awaked an interest in me to create an app which also connect to a server database and has a web interaction as well. This course was equally as exciting as 411-intermediate Java.
- Subject is very good for beginners. I being a beginner to the Android world enjoyed learning from basics to advance.
- Very Good Course. Basic to Advanced Android development covered.
- I would suggest you to give a little more advanced applications in the assignments.

ITMD 461 Internet Technologies and Web Design

- Easy assignment, please make the assignments tough so that students will learn more from it.
- Great class for ITM.
- I liked the format of this class with the realistic demonstrations.
- Mr Bailey should be allow to teach 562 (PHP) and 565 (Javascript) with the same fervor that he taught 461. Overall he is an excellent professor.
- "This course was very fulfilling! The curriculum for this course accomplishes the objectives in a logical order. Expectations are clear and consistent. Assignments very directly reflect the students understanding of the material. Tests and quizzes thoroughly cover the entirety of the material without excessive laborious effort. This course could be categorized as elegant."

ITMD 465/565 Rich Internet Applications

- I'll give it the generic rant I give for most programming courses: I'm not a whiz kid and it's really annoying that we cover all this high-level stuff and cover lots of it. I want to learn how to program, not what to program. I learned HTML & CSS by tearing apart websites and experimenting. That is much more effective than reading/learning about all the features (which I don't really care about anyway nor have the capacity to effectively absorb in one semester).
- This course is useful and I do learn it a lot from that,especially for job
- I know this is a difficult course to teach specially with the time period being so short to cover all the course syllabus in depth. Course syllabus can be made little short. Since, there is so much on my plate to eat.
- Worth your money !
- Well planned course
- Excellent! Learned a lot.
- Labs are a great idea ! Discussion forum is good for us to help between each other. No written exam is very good. Quizzes are a little hard. Maybe spend more time explaining Node.JS and Web RTC.
- Great course. Lots of learning.
- Highly Recommended
ITMD 465/565 Rich Internet Applications

- "Very nice course. I specially like some 'sips' of additional knowledge that we have learned such as computer graphics. I find the labs VERY useful. They are easier than the assignments but thank to them we can prepare a bit for the upcoming assignment. I suggest to use labs in ITMD562 too."
- Awesome course.
- One of the most useful courses I have taken at IIT.
- "I would have preferred learning a little about javascript graphs and the best libraries available as that can be used in a lot of day to day tasks for data analysis. Leaning 3D was cool but I did not think it was so effective as we need to know a lot of math in order to understand and implement 3D. I would have also liked to learn a lot about mobile javascript as we are in the era of mobile applications. Overall the course was very informative and interesting."
- I wish this course had more to do with frameworks than covering basics in the initial courses. I believe 461 is a prereq which is about html, css, javascript & jquery except for the namespaces.
- "I think that the introduction of labs is a great idea. I also think that for the quizzes in class it would be better to be able to have some notes as if you are not familiarized with the programming language yet, it is difficult to remember the syntax. The course is hard but we end up learning a lot."
- JavaScript is soooooooo powerful and it will be the future in development. This class should always be provided to ITM students because it will give us the advantage when we are in our career field.
- I DIDN'T like 3D GRAPHICS. EW what a waste of time. OTHER THAN THAT OMG IT WAS MY DREAM COURSE! LEARNT SO MUCH. SINCE I WAS A KID, I WANTED TO LEARN ALL THESE STUFF AND I AM SO HAPPY THAT MY WISH HAS BEEN FULLFILLED AND ALL..!
- This course was difficult yet fun and kept me challenged. For me it was somewhat difficult to complete the assignments to their completion due to my lack of knowledge with Rich Internet Applications. It would be good for the instructor to give resources which could help with complete of assignment for topics not covered in the lecture. Or possibly do similar in class examples to what is needed in the assignments.
- Very good course to learn on client side technologies. Also the topics professor tried to cover was very good.
- The course is one of the best in ITM for web development as it gives very good insight to the latest technologies.
- The course was good with hands-on experience and live demonstrations of examples.
- The syllabus can also include angularjs framework as it is the requirement for every recruiter.
- Few more course material is required for understanding the concepts.
- I think the part that involves WebGL technologies is very interesting. However as this technology is so vast for being a small part of a course I think in the future it will be a good option to remove it and focus on MVC or MVW technologies such as Angular.js.
- "It was great learning experience. I just wished, it had more of Node.js or any one JavaScript Framework."
- "This is best course i have taken till now. Professor is very good in his knowledge. It helps me a lot..!!"

ITMD 466/566 Service-Oriented Architecture

- Complete waste of my time and 3500$. Biggest issue was the over focus on memorization (per response 1 above). And then there was the issue of "groups". In my case, this meant being saddled with another student who had never built a web service (or anything in Java) before. This meant in the end that I had to do all of the work and when I tried to give him something to do, he did it incorrectly, but he was rewarded for my work all the same. Of course this was said "to be real world". Ummm, I work in the real world and I don't deal with (or hire) developers who have no experience. If you are going create groups, then it should be done on the experience of the students and not based on popularity. But all that aside, the real question is: What did I learn? 0.0. Thankyou IIT, I hope you enjoyed my check.
- Course was good, got a better understanding of XML and web services. We should have been given independent assignments because at the end, I ended up doing 70% of the work.
- It would be great to have 1-2 lectures on introduction to Design Patterns.
- Learnt a lot.
- Excellent Course. It provides an overall understanding of Web Services and it covers majority of technologies and languages.
ITMD 469/569 Topics in Application Development: Big Data

- It is a ITMD subject with no signs of development. I felt cheated. If it was entire theoretical then it should have been in ITMT section. No hands on demonstration approach in Hadoop. Professor lacks interest in teaching. Overall I would suggest remove this subject in ITMD section and put in ITMT section so that students don't get mislead next time when they take this course.
- The course is purely theoretical. no coding, no tools learned. no labs, no assignments. just waste of time and money
- "Course content is very good but our professor did not pay attention to it and verbally covered topics what he felt suitable. As a result none of us is did any hands on Big Data technologies.
- Request: In future a Hadoop cluster can be made available to students so that student can do some hands on it.
- "Big Data as a course is a must in the curriculum. Its something that is in such a high demand and must be taught thoroughly to all students. And the course should especially cover programming.
- Sadly we were only taught theoretical knowledge, which im afraid is not enough to get a job in this field."
- "No practical assignment provided through out the course, lecture not organized to cover the knowledge needed by the industry.
- There were no assignment and only quiz were provided which need only google search skills to get answers.
- Not satisfied at all from the course and there is no gain from the subject which we could reproduce in interviews or in industry applications."
- This course is a good introduction to the issues surrounding big data, and to several big data platforms students might encounter in the business world. The course could use a bit more hands-on experience with big data systems, but its focus on the platform-independent requirements for big data processing are valuable in the context of rapidly changing software and hardware environments. I would recommend this class to anyone who is interested in big data, and its implications for computer and network architectures.
- There has to be more software part and hands on experience rather than learning just the hardware part
- Giving us information that big company use gives us leverage on what to prepare us for when we seek out professions within them.

ITMM 470/570 Fundamentals of Management for Technology Professionals

- "My primary complaint about this class would be the split of undergrads and grad students. I am a grad student, and this class is taught very much directed towards undergrads - an attendance sign in sheet?? seriously? Also, the random assignment of groups using blackboard has not worked out well for me. I suspect that I am in a group with two undergrads.....why am I paying graduate level tuition!!? I frankly do not have the time or the patience to hand hold my group members through the process. I completed ALL of part 1 and 2 (50% of the project) without any input from them, due to their complete lack of response. Coordinating a meeting with them was attempted multiple times - they either did not respond or canceled at the last minute. When I sent the final budget for them to review and asked for very specific feedback/input I got extremely vague responses (a week after sending it to them). Essentially the best part of this class is that it wasn't that much work (compared to my other classes) and it checks off a box so I can graduate."
- It was ok.
- "The course content was very useful and presented in a way that was easy to understand. I also liked the structure of the class with regard to the planned lectures and discussions. The reason I scored this course at a 3 is because throughout the semester I felt like there was a lack of communication on some aspects. First, as an online student, it was frustrating not knowing who to direct my questions to--the TA or Madeleine. And there were several times when either received no response or I received a response that did not address my question. Second, the team project was a bit chaotic. I think it would be better to offer an individual final project for people who would like to because coordinating with my group members was extremely difficult--people either did not respond to emails, waited several days to respond, or didn't make an effort to make team meetings."
- overall you learn a lot that you think you knew
- Very informative, gave a good look into the IT profession.
- This course is a perfect blend of Managerial skills and IT.
- "Very practical. I think it will be very helpful in my career."
ITMM 471 Project Management for ITM

- "This class provides some of the material needed for a PM (speaking from some experience), but I don't see a lot of this information necessary or even relevant especially with the growth of Agile methodologies.
- A couple of colleagues and myself thought that a lot of the class was either common sense or something that we would never see be useful in a real situation.
- Also, the homework in the class did not help me understand what it is to be a project manager. It made me think that I never want to be a project manager especially if you have to BS a lot of the content in order to fit the "requirements".
- I feel like this course was a complete waste of money due to my professor. I currently intern in the IT corporate world and I am very scared to do any sort of project management. I feel like this has slightly crippled my future. And all I did was waste thousands of dollars.
- This class is horribly unbalanced in its workload versus what we learn. It had four huge homework assignments, a midterm, a rough draft, a team project, a webinar, a final paper, and a final exam. This class should be limited to either or, not all of the above.
- "I am a student on campus, my whole group for the final project where in the online course. They excluded me from the work. I learned nothing and I fear that they will try to have my grade reduced even though they did not contact me or share any necessary documents with me. Do NOT mix the on and off campus students for the final projects. Additionally, as a non-ITM major who is taking this class for an ITM minor, I would have been better suited taking the business equivalent of this class. I learned nothing more about IT which is why I was minoring in it. If I needed to learn more about ROI, Budgeting, Scheduling, Team Motivation, etc., I was better off taking an IPRO."
- I think the course itself is very self-explanatory and self taught. Besides a few definitions and equations a lot of the material has been learned in a class or another. It just was a very boring class, many students would be sleeping in the class.
- I feel this course is important and pertains to any major. This course teaches how to manage teams and also how to become a manager itself. These topics can be used for any individual that wants to rise to a higher position in any job.
- This course is broad and it's not providing detailed examples or simulated IT projects to manage.
- It's an interesting course, some is common sense while some is not. I did learn project management techniques through this course.
- This course prepares us for working as a team leader and to adjust decision making to best fit budget and schedule, while also maintaining the workers and project.
- Very useful course; coursework was normally easy if one paid attention during the lecture. Helped to understand how to structure projects in the future.
- Seems like material that should be fairly common sense.
- One the 3 best (ITM) courses offered to undergrads.
- Wish there was more homework related to project managing. The homework assignment were very helpful to opening my mind to think like a project manager. Just wish there were more homework to gain more knowledge.

ITMM 482/582 Business Innovation

- "The course is required for my program, but I can't see why. There are two one-hour classes every week. However, the professor can only spend about 10-15 minutes with each group in each class, not to mention that we had several days off. Besides the project, our assignments were to read articles and answer questions. But there isn't a clear explanation about how to answer them, nor were we taught much related. And there weren't sample answers for the questions. The only feedback that I got was something like "Not In-depth". If I lose points because my answers were not thoughtful, I would like to know which aspects I should improve, how an in-depth answer would look like. I talked with the TA as she does all the grading, but the only meaningful thing she mentioned was not enough citations to the article. I still don't know what she is looking for, what kind of answers would get full credit. There isn't a correct answer to everything, especially in an innovation class. But the requirement is so unclear that I don't know how to meet the requirement."
- The course is good. It challenges me to think and be innovative.
- No issues with the course in particular, she has mentioned switching up the material which would be helpful as the modules are repetitive.
ITMM 482/582 Business Innovation
- "When I first took this course I thought Business Innovation had a broader horizon. But then it was simply confined to Distance Learning, which was not as appealing to me which I thought it should have been. It is an innovating subject, it should let the student choose their own topics."
- garbage book, but useful class to take

ITMM 485/585 Legal & Ethical Issues in Information Technology
- The professor reads off the slides, almost verbatim. The slides should be a framework for the class, but the professor seems to constantly rely on the slides as a crutch. Ray Trygstad seems to be an intelligible person; not an intelligible lecturer. Using Blackboard for online class participation is a terrible idea. I can understand using Blackboard might be an administrative decision on IIT's behalf; but don't force the students into using a broken interface that directly impacts their grade. Mundane blog posts about the world around us, do nothing for my development as an IT professional. I had high hopes for this class, but cannot get past the way this class was structured. The class seemed generic and not one I can recommend to anyone, ever.
- Ray has done a good job of making a class that could be incredibly dull, very interesting. The biggest thing I enjoy about this course are the external articles/videos/examples that Ray gives for every lecture. Overall a very informative course.
- I think this course would be better taught as discussion based than lecture based.
- Very interesting class, everything I thought it would be.

ITMO 433/533 Enterprise Server Administration
- Useful information on Server 2008
- We were learning Windows server 2008 when windows server 2012 has been out of 3 year already. By the time I graduate with my masters degree, Windows 2008 will be dangerously close to end of life.
- Out of all the courses I have taken in the past 4 years this class is by far one of the classes that I have learned the most and can apply the course material to real life and future work.
- This course provides good hands-on experience in Windows Server administration. I would recommend the class to anyone who wants to become a Windows system administrator, or who wants to develop Windows applications and gain a better understanding of the environment in which their software will operate.
- excellent teaching methods
- Probably Windows Server 2012 should be thought instead of 2008 since some students have about 2 years of studies which potentially put them behind.

ITMO 440/540 Introduction to Data Networking & the Internet
- The projects really helped understand the coursework. The homework assignments truly prepared me for the exams.
- I feel like the course is far above the introductory grade. As many things that have to be crammed in is unacceptable. Got into way to many specifics that do not matter or hold weight in the IT world today. Keep up with current technologies and do not dive into 90s and early 2000 technology.
- really didnt like this class. uninteresting, boring, no idea how ill use this in the future
- Not my favorite course, but still very interesting.
- "The course was very comprehensive and discussed the topics in thorough detail. The workload was unexpectedly heavy and demanding. This course deserves separate lab hours. Much of the coursework was perceived by many of the students as busywork. The workload and style of work was not consistent with the other courses in the ITM program."
- I believe that this course is essential to the program, for we have very little to no Networking experience coming out of the program, unless students make an extra effort to do so. If anything, I believe an advanced version of this course being required would help a lot of students better prepare for real world jobs they may encounter.
- Good course
- The online portion of the course was not that great. I had trouble following the material because the person controlling the video was not always moving with the teacher and it was hard to follow the material when she was teaching it. There were multiple instances not just one time.
- "It seems like half the course requires you to get an understanding over how to use Wireshark, and the other is the innerworkings over Wireshark through a draconian-like means of teaching.
ITMO 440/540 Introduction to Data Networking & the Internet

- When teaching Wireshark and integrating it into the class, it doesn't feel like a smooth transition. It's two clear, cut and dry objects whereas the course itself should feel like the two objects should be one.
- I feel like if we had the table for PA 6 ahead of time that would have helped us at the end when we had to put all the data in.
- Very intense, extreme learning curve, tight scope and absolutely practical
- Really helpful and interesting! I'd take this course over and over again! It covered a lot of interesting topics that are going to be useful in the field of Data communications. It really inspired me to go further and discover if this might be a potential career for me.
- Although the pace is on the slow side, it's probably best that way. The material learned isn't rushed, and allows the student to maintain the information taught, rather than be given something at such a pace that they'll have lost it by the time their next class starts.
- May be a lab with this course would be an additional advantage.

ITMO 441/541 Network Administration & Operations

- "Good course to have a general idea about protocols on the application layer. I suggest to use the first day of class to explain the basics of Linux (or CentOS) commands. I was new to Linux and I would have liked to have that. Some slides with commands and their meanings would be perfect. Instead of the research paper, I suggest making the students do a final project of configuring a Linux machine to perform a certain function (let's say, a proxy). I think this would let us put in practice what we've learnt throughout the course."
- Course not so great, could be better if the lectures are held in a computer lab that would allow us to ask doubts and questions during the class only.
- Learn how to make two virtual boxes connect using various networking schemes.
- This course is excellent. Then again the course is only as good as the instructor. Loved it.
- Excellent course. I love courses with Labs where we can apply what we have learned.
- Very Good
- Some labs are too broad, but still good. Slides can get a little boring.
- Subject matter was very informative and easily understandable. I can apply my new found skills to my everyday personal and professional encounters
- This course includes a great deal of hands-on experience for administrators of various network services. I would recommend the class to anyone who intends to work with such services, or anyone who wishes to gain a deeper familiarity with network applications.
- Best. class. ever. learned how to linux better than ever. also, learned 101 ways to fail at linux.

ITMO 450/550 Enterprise End-User System Administration

- Overall I think this is a great course that gives students great experience to students looking to be sys admins.
- Learned a lot and was able to sharpen my Windows config skills.
- It was good to learn user side support for Windows. One feedback I would have for instructor, would be to setup the lab as a faux office environment and implement the labs where we had to manage multiple departments in a business environment.
- The class was very interesting. I learned a lot about Enterprise systems administration. The class labs could be improved a bit for the next semester but overall the labs + lecture go hand in hand and make for a great learning experience.

ITMO 454/554 Operating System Virtualization

- "Just about everything in this course is relevant to what students can expect to see in the field. The hands on labs teach us to set up completely virtualized environments from start to finish.
- Probably one of the most valuable classes I have taken here at IIT, in regards to ability to implicate in the real world work place. Highly recommend."
- The final project needs more time for students to work on it. Otherwise great class.
- First virtualization course, so difficult to compare. That said, I learned a tremendous amount. Very happy with how authentic the labs were, in establishing, running, maintaining VMs
- important course, should become a part of CYF course
ITMO 456 Introduction to Open Source Operating Systems

- Although the assignments take an extremely long time to accomplish, this course results in a high learning curve due to the teacher-to-student interaction with finishing labs.
- basic knowledge but applicable & needed
- It's a good course and it's a great way to introduce students to Open Source.
- Too much busywork in the homework makes it hard to learn anything useful. While I understand the need for beginners to do the basic busywork, it would probably be more beneficial to offer an intermediate level class and offer students the choice of a intro or intermediate level class.
- Absolutely necessary but it can split into 2 levels for a better understanding and appreciation.
- "The class is great but some of the homework needs to be structured a bit differently. I feel that the questions from the book sometimes don’t make sense and leave you on a single question for a long time. Also maybe the classroom server could be hosted by SAT allowing for students to SSH in and perform assignments."
- Lots of hands on labs very good for comprehensive knowledge of Linux

ITMS 484/584 Governance, Risk and Compliance

- Not very interactive.
- The content of the course is very good. Does what it aims to do.
- Nice and fair.
- The course held my interest and was useful.
- Great class.
- This is an excellent course. A great addition to the Security coursework within the ITM program. Many methodologies were covered and explained in great detail. This is a must take for anyone interested in information assurance management.
- I wish we were able to do some examples using different law and regulation and how are they applied or how we choose which standards of governance/frameworks to use to be secure.
- important addition to any IT course, proper documentation is a crucial skill in any job course
- Professor Goins is very knowledgeable in the topic. Her experience in the field does add a level of confidence to what we are learning in the class. I feel her class will prepare us for situations we might encounter in the future.
Academic Programs
Undergraduate Curricula

Undergraduate Curricula at IIT

IIT combines excellence in academic preparation for professional careers with opportunities for practical experience in the major branches of engineering, the sciences, mathematics, architecture, computer science, business, and liberal arts. IIT Core Curriculum requirements are described on page 25. Specific degree requirements are described in the departmental listings beginning on page 26. For minors, see pages 172–175.

Undeclared Majors

Students who are unsure of their career choices may enter IIT as undeclared or open majors. During the first year of study, undeclared majors take required IIT Core Curriculum courses in science, mathematics, computer science, humanities, and social science. These courses provide the foundation for nearly all of IIT’s major programs. Because core curriculum courses apply to all majors, most students may wait as late as the sophomore year to declare their major and still graduate on time.

Department, Degrees, and Certificates

Applied Mathematics Department
- Bachelor of Science in Applied Mathematics

College of Architecture
- Bachelor of Architecture

Biological and Chemical Sciences Department
- Bachelor of Science in Biochemistry
- Bachelor of Science in Biology
- Bachelor of Science in Chemistry
- Bachelor of Science in Molecular Biochemistry and Biophysics
- Certificate in Premedical Sciences

Biomedical Engineering Department
- Bachelor of Science in Biomedical Engineering

Stuart School of Business
- Bachelor of Science in Business Administration

Chemical and Biological Engineering Department
- Bachelor of Science in Chemical Engineering

Civil, Architectural, and Environmental Engineering Department
- Bachelor of Science in Civil Engineering
- Bachelor of Science in Architectural Engineering
- Bachelor of Science in Engineering Management
- Certificate in Engineering Graphics and CAD

Computer Science Department
- Bachelor of Science in Computer Science
- Bachelor of Science in Computer Information Systems

Electrical and Computer Engineering Department
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Engineering

Humanities Department
- Bachelor of Science in Communication
- Bachelor of Science in Digital Humanities
- Bachelor of Science in Humanities

Industrial Technology and Management Department – School of Applied Technology
- Bachelor of Industrial Technology and Management
- Certificate in Industrial Technology and Management

Information Technology and Management Department – School of Applied Technology
- Bachelor of Information Technology and Management

Mathematics and Science Education Department
- Mathematics and Science Education Secondary Science or Mathematics Teaching Licensure

Mechanical, Materials, and Aerospace Engineering Department
- Bachelor of Science in Mechanical Engineering
- Bachelor of Science in Materials Science and Engineering
- Bachelor of Science in Aerospace Engineering

Physics Department
- Bachelor of Science in Applied Physics
- Bachelor of Science in Physics
- Bachelor of Science in Physics Education

Psychology Department
- Bachelor of Science in Applied Analytics
- Bachelor of Science in Behavioral Health and Wellness
- Bachelor of Science in Consumer Research, Analytics, and Communication
- Bachelor of Science in Psychology
- Certificate in Industrial Training

Social Sciences Department
- Bachelor of Science in Political Science
- Bachelor of Science in Social and Economic Development Policy
- Bachelor of Science in Sociology
Co-terminal degrees allow outstanding IIT undergraduate students to simultaneously complete both an undergraduate and graduate degree (Bachelor’s degree and Master’s degree).

Co-terminal degrees provide an opportunity for students to gain greater knowledge in specialized areas while completing a smaller number of credit hours. Because most co-terminal degrees allow students to share course credit (a maximum of 9 credit hours), students may complete both a Bachelor’s and Master’s degree in as few as five years. All degree requirements must be completed within six years of undergraduate matriculation, or the student will be dismissed from the co-terminal degree program.

Co-terminal students maintain their undergraduate student status while completing graduate coursework, and can maintain financial aid eligibility when applicable.

The following are co-terminal degrees approved as of July 2014. Please consult the Graduate Admission website for an updated degree list: admissions.iit.edu/graduate

**Applied Mathematics**
Bachelor of Science in Applied Mathematics/Master of Science in Applied Mathematics
Bachelor of Science in Applied Mathematics/Master of Computer Science
Bachelor of Science in Applied Mathematics/Master of Science in Computer Science

**Architecture**
Bachelor of Architecture/Master of Construction Engineering and Management

**Biological and Chemical Sciences**
Bachelor of Science in Biochemistry/Master of Biology with Biochemistry specialization
Bachelor of Science in Biochemistry/Master of Science in Biology with Biochemistry specialization
Bachelor of Science in Biochemistry/Master of Food Safety and Technology
Bachelor of Science in Biology/Master of Biology
Bachelor of Science in Biology/Master of Science in Biology
Bachelor of Science in Biology/Master of Computer Science
Bachelor of Science in Biology/Master of Science in Computer Science
Bachelor of Science in Biology/Master of Food Safety and Technology
Bachelor of Science in Chemistry/Master of Food Safety and Technology

**Biomedical Engineering**
Bachelor of Science in Biomedical Engineering/Master of Biomedical Imaging and Signals
Bachelor of Science in Biomedical Engineering/Master of Chemical Engineering

**Business Administration**
Bachelor of Science in Business Administration/Master of Public Administration

**Chemical, Biological, and Food Process Engineering**
Bachelor of Science in Chemical Engineering/Master of Biological Engineering
Bachelor of Science in Chemical Engineering/Master of Chemical Engineering
Bachelor of Science in Chemical Engineering/Master of Environmental Engineering
Bachelor of Science in Chemical Engineering/Master of Food Process Engineering

**Civil and Architectural Engineering**
Bachelor of Science in Architectural Engineering/Master of Architectural Engineering
Bachelor of Science in Architectural Engineering/Master of Construction Engineering and Management
Bachelor of Science in Architectural Engineering/Master of Structural Engineering
Bachelor of Science in Civil Engineering/Master of Construction Engineering and Management
Bachelor of Science in Civil Engineering/Master of Environmental Engineering
Bachelor of Science in Civil Engineering/Master of Geotechnical Engineering
Bachelor of Science in Civil Engineering/Master of Structural Engineering
Bachelor of Science in Civil Engineering/Master of Transportation Engineering

**Computer Science**
Bachelor of Science in Computer Science/Master of Science in Applied Mathematics
Bachelor of Science in Computer Science/Master of Computer Science
Bachelor of Science in Computer Science/Master of Science in Computer Science
Bachelor of Science in Computer Science/Master of Intellectual Property Management and Markets

**Electrical and Computer Engineering**
Bachelor of Science in Computer Engineering/Master of Electrical and Computer Engineering
Bachelor of Science in Computer Engineering/Master of Science in Computer Engineering
Bachelor of Science in Computer Engineering/Master of Science in Electrical Engineering
Bachelor of Science in Computer Engineering/Master of Computer Science
Bachelor of Science in Computer Engineering/Master of Science in Computer Science
Bachelor of Science in Electrical Engineering/Master of Electrical and Computer Engineering
Bachelor of Science in Electrical Engineering/Master of Science in Computer Engineering
Bachelor of Science in Electrical Engineering/Master of Science in Electrical Engineering
Undergraduate Curricula

**Industrial Technology and Management**
Bachelor of Industrial Technology and Management/
Master of Industrial Technology and Operations

**Information Technology and Management**
Bachelor of Information Technology and Management/
Master of Cyber Forensics and Security
Bachelor of Information Technology and Management/
Master of Information Technology and Management

**Mechanical, Materials, and Aerospace Engineering**
Bachelor of Aerospace Engineering/Master of Materials Science Engineering
Bachelor of Aerospace Engineering/Master of Mechanical and Aerospace Engineering
Bachelor of Mechanical Engineering/Master of Materials Science Engineering
Bachelor of Mechanical Engineering/Master of Mechanical and Aerospace Engineering

**Physics**
Bachelor of Science in Physics/Master of Health Physics
Bachelor of Science in Physics/Master of Science in Physics
Bachelor of Science in Physics/Master of Computer Science
Bachelor of Science in Physics/Master of Science in Computer Science
IIT Core Curriculum

The core curriculum is designed to ensure that all IIT graduates have a basic understanding of certain essential areas of knowledge. The core curriculum sets minimal requirements. Most degree programs require additional courses in these areas. These additional course requirements are found in the departmental listings. Core curriculum requirements will not be waived. Substitutions may be considered upon written request to the Office of Undergraduate Academic Affairs. Approval will be granted on an individualized basis and then, only under extraordinary circumstances.

A. Writing and Communications
IIT recognizes the importance of critical thinking, writing, and oral communication in all academic pursuits and in professional practice. IIT is committed to a campus-wide program that engages students in the practice of written and oral communication in all disciplines. This program includes the following components:

1. Students who have not received transfer or AP credit for COM 101 at IIT must take the IIT English Proficiency Examination before starting classes at IIT. Within their first year at IIT, students who do not pass the IIT English Proficiency Examination must demonstrate basic writing proficiency by passing a composition course at IIT. This requirement applies to all students enrolling for an undergraduate degree.

2. Students must complete a minimum of 36 credit hours of courses with a significant written and oral communication component, identified with a (C) in this bulletin, with a minimum distribution as follows:
   (a) 12 hours in major courses.
   (b) 12 hours in non-major courses.
   (c) Full-time students should enroll in two (C)-designated courses, and part-time students should enroll in one (C)-designated course each academic year.

3. Students must contact the IIT Writing Center (see page 259) when referred by course instructors or academic advisors.

B. Humanities 200-level Course
All students must complete HUM 200, 202, 204, 206, 208, or any other HUM 200-level elective.

C. Human Sciences Module
All students must complete 18 credit hours subject to the following distribution requirements:

1. At least two Humanities courses (H) designation at the 300-level or above. Students may use foreign language courses at the intermediate and advanced level to fulfill 300-level requirements.

2. At least three Social or Behavioral Sciences courses. These courses are marked with an (S) in this bulletin. The courses must be distributed as follows:
   (a) At least one course at the 300-level or above.
   (b) Courses from at least two different fields.
   (c) At least six credits in a single field.

D. STEM Module
A minimum 16 credit hours is required between Mathematics and Natural Science or Engineering.

1. Mathematics: 5-6 credit hours
   The courses must be at the level of MATH 119 or above. BUS 221 and PSYC 203 also satisfy this requirement.

2. Natural Science or Engineering: 10-11 credit hours
   This component may be satisfied by courses in engineering, biology, chemistry, physics, or courses in architecture, food safety and technology, and psychology marked with an (N).
   These courses must be distributed as follows:
   (a) Two sequential natural science or engineering courses in a single field. (CHEM 124 with MS 201 satisfies this requirement.)
   (b) At least one natural science or engineering course in a second field.

3. Computer Science: 2 credit hours
   All students must take CS 104, 105, 110, 115, 116, 201, ARCH 107, ITM 311, or a computer science course at the 300-level or above.

E. Collaborative Interdisciplinary and/or Professional Experience
All students must take 8 credit hours as follows:

1. Introduction to the Profession: 2 credit hours
   Students must complete this requirement in their first year. Students entering with 30 hours or more of transfer credit may have this requirement waived with department approval. If waived, the total credit hours required for the degree still must be satisfied.

2. Interprofessional Projects (IPRO): 6 credit hours
   Students will participate in at least two Interprofessional Project experiences. These projects develop communication, teamwork, and leadership skills, as well as an awareness of economic, marketing, ethical, and social issues within the framework of a multidisciplinary team project. The project teams will be integrated across academic programs and at different levels within programs. Students who complete an ROTC minor are exempt from one of the two IPRO requirements.
Academic Policies and Procedures
Academic Policies and Procedures

Academic Loads

The average full-time academic load during the fall or spring semester is 15 credit hours. The minimum registration required for full-time status for those semesters is 12 credit hours. Full-time degree-seeking students who wish to enroll for more than 18 credit hours or part-time degree-seeking students who wish to enroll in 9 to 11 credit hours must obtain permission from their academic dean.

Students who wish to enroll in more than two courses during the summer term must obtain permission from their academic dean. Non-degree students requesting a course overload (more than eight credit hours) must obtain permission from the Office of Undergraduate Academic Affairs.

Academic Program Audit

An academic audit provides a summary of a student’s academic status to date and lists the courses to be completed in order to receive a degree. Students can request an official academic audit from the Office of Undergraduate Academic Affairs after they have earned a minimum of 60 semester hours, 90 semester hours for architecture students. Students may request an official academic audit through the Academic Affairs channel in the IIT Portal. Students may also review academic progress towards their degree through the DegreeWorks channel in the IIT portal.

Academic Progress, Probation, and Academic Suspension/Dismissal

All students who are degree candidates are expected to maintain satisfactory academic progress. This includes earning satisfactory grade point averages (GPA) and maintaining a satisfactory rate of progress toward the completion of their degree programs.

Students who do not earn at least a 2.00 cumulative GPA, a 1.85 current GPA, or a 2.00 major GPA are placed on academic probation.

Degree-seeking students are required to maintain a satisfactory rate of progress.

• Full-time students must earn a minimum of 12 credit hours per semester applicable to their degrees.
• Part-time students must maintain a satisfactory rate of progress which will enable them to graduate within 12 academic years after achieving degree-seeking status.

Students who do not maintain a satisfactory rate of progress in a given semester may be placed on probation based on the recommendation from the student’s academic advisor, department associate chair, and academic dean. Probation may affect financial aid. See Student Eligibility Requirements to Receive Federal and State Financial Assistance on page 12.

Students on probation are not permitted to:

• Register for more than 15 credit hours per semester unless they receive approval from the associate dean of their college.
• Hold an elected or appointed office in any student organization. Probation does not affect membership in a student organization.
• Participate in the Cooperative Education Program unless approved by the vice provost for Undergraduate Academic Affairs.

Academic probation may affect a student’s eligibility to participate in varsity athletic sports.

Students who are on academic probation for two consecutive semesters are candidates for academic suspension from IIT.

The progress of non-degree students also is reviewed and any student who does not maintain good academic standing is subject to being placed on probation or academic suspension.

A student placed on academic suspension by the University may petition the Academic Standing Committee to review the suspension. The student must present substantial academic or other relevant new evidence not available at the time of suspension in support of the petition for reinstatement. The chair of the Academic Standing Committee will determine whether the new documentation warrants a further review of the case.
Advising

Each undergraduate student is assigned a faculty academic advisor who is available to discuss opportunities and career plans in the student’s chosen field and to plan and approve coursework to meet departmental and university requirements. Students are urged to consult their advisors when questions arise.

Department advisors, the director of undergraduate advising, and advisors in Office of Undergraduate Academic Affairs are also available to answer questions and interpret policies regarding university requirements and academic procedures.

Change of Major or Declaration of Additional Majors

Students considering either a change of major or concurrently pursuing a second undergraduate degree or major should consult the departmental associate chair regarding program requirements and career opportunities in the new degree program.

Students may also review requirements for the new degree program by performing a “What If” audit using DegreeWorks. Students may access the DegreeWorks channel through the IIT portal.

An advisor in the Office of Undergraduate Academic Affairs can also assist a student in the selection of a suitable major. A student who wishes to change or declare a major or concurrently pursue an additional undergraduate degree program must obtain these forms from the Office of Undergraduate Academic Affairs or at www.iit.edu/ugaa. Approval from the intended major department is required.

Change of Status

Students who wish to change a classification and/or registration status must complete the applicable procedures listed below no later than two weeks prior to registration.

- Students changing from full-time degree-seeking status to part-time degree-seeking status must notify the Office of Financial Aid if they are receiving financial aid. International students with student visas must be registered as full-time students and are not permitted to change to part-time status.
- Students changing from part-time degree-seeking status to full-time degree-seeking status must inform their department and obtain the necessary advisor’s approval for a full-time course load. Also, students in this category who wish to apply for financial aid must notify the Office of Financial Aid regarding their change of status.
- Students changing from non-degree status to full-time or part-time degree-seeking status must contact the Office of Undergraduate Academic Affairs. Students must have completed at least one semester of relevant coursework at IIT and must be in academic good standing in order to be eligible for changing their status.
- Students changing from graduate status to undergraduate full-time or part-time status must submit an application for admission to the Office of Undergraduate Admission.

Code of Academic Honesty

IIT expects students to maintain high standards of academic integrity. Students preparing for the practice of a profession are expected to conform to a code of integrity and ethical standards commensurate with the high expectations society places on practitioners of a learned profession. No student may seek to gain an unfair advantage over another. The Code of Academic Honesty is explained in the IIT Student Handbook and all students are expected to know and adhere to this code.
Credit by Examination

Credit may be earned through the following examination procedures. Total credit from proficiency examinations and the College Level Examination Program may not exceed 18 semester hours. There is no limit for Advanced Placement (AP) credit.

College Level Examination Program (CLEP)

For these examinations, which are administered by the College Entrance Examination Board, IIT will award credit under the following conditions:

- The CLEP examination and the score achieved meet the standards of the IIT department that offers courses in the area of the examination.
- The CLEP examination is taken before the student enters IIT.
- Students must observe all rules of the College Level Examination Program regarding the taking of CLEP examinations.

NOTE: Previous acceptance of the examination by another institution does not imply acceptance by IIT.

Proficiency Examinations

Any student who believes that, through self-study or outside experience, he or she has gained the substantive equivalent of the content of a specific course may ask for an examination. With the approval of the chair of the department offering the course and the Office of Undergraduate Academic Affairs, a proficiency examination will be administered. This is a graded exam and the letter grade will be entered on the permanent record. Proficiency examinations are not allowed for courses in which the student has previously enrolled and must be completed before a student’s final 45 semester hours of enrollment at IIT. The Credit by Examination Form may be obtained in the Office of the Registrar and a per-credit-hour fee is charged for each examination.

Dean’s List

Every semester the names of all undergraduate students who have completed at least 12 graded hours with a semester GPA of 3.50 or better appear on the Dean’s List.

Grade Appeal

The assignment of letter grades (see grade legend) is at the discretion of the course instructor, and except for unusual circumstances, the assigned course grade is final.

Undergraduate students who want to appeal a letter grade assigned in a course should first confer directly with the course instructor. If the student and instructor cannot come to an agreement, the student should contact the chair of the instructor’s department. If necessary, the student can appeal to the dean of the instructor’s college.
Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Description</th>
<th>Instructor</th>
<th>Performance</th>
<th>At tempted</th>
<th>Earned</th>
<th>Quality</th>
<th>Quality</th>
<th>GPA</th>
<th>FinAid</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Assigned</td>
<td>Evaluated</td>
<td>Hours</td>
<td>hours</td>
<td>Points</td>
<td>Hours</td>
<td></td>
<td></td>
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<tr>
<td>A</td>
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<tr>
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<tr>
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<td>✓</td>
<td>✓</td>
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</tr>
<tr>
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<td>✓</td>
</tr>
<tr>
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</tr>
<tr>
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<td>✓</td>
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<td>✓</td>
</tr>
<tr>
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<td>✓</td>
<td>0.00</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Grade Notes

AU  Grade basis elected by student at point of registration. Permanent administrative grade automatically applied. An audit request must be submitted at the time of registration and courses may not be changed to or from audit after the registration period. There is no credit given for an audited course. Regular tuition rates apply.

D  Used for undergraduate students only; not used to evaluate graduate level course work.

I  The student must request this temporary grade from the instructor through the incomplete grade request process prior to the week of finals. The I grade is automatically posted when the Registrar’s Office receives the approved request. A written agreement between the student and instructor must detail the remaining requirements for successful completion of the course. A grade of I will be assigned only in case of illness or for unusual or unforeseeable circumstances that were not encountered by other students in the class and that prevent the student from completing the course requirements by the end of the semester. Grades of I will automatically change to E on the published deadline of the subsequent term.

NA  Apparent withdrawal as a result of the student never attending a registered section.

NG  Grade for a course in which no evaluation is recorded. Permanent administrative grade automatically applied.

P/F  Used for non-degree continuing education courses. All Continuing Education Unit (CEU) courses are graded on a pass/fail basis.

R  Temporary grade indicating coursework is scheduled to extend beyond the end of term. The grade of R has same impact as an I grade until final letter grade is submitted. The grade of R does not expire or change to another grade.

S/U  Graduate level courses only. Used for 591, 594, 600, 691, non-credit courses, and other courses approved by the Graduate Studies Committee. Not to be used for 597 variable topics courses.

W  Permanent administrative grade automatically applied when student withdraws before deadline (60% of term). Grade of W does not affect GPA, and no credit hours are awarded for a grade of W.

X  Temporary administrative grade automatically applied to blank grade rosters at grading deadline.
Grading Procedure

Online submission of final grades are due on the published deadline following final exams. Grades of X are posted for all missing (blank) grades at that time and are resolved through the grade change process. All grade changes are initiated by the instructor of record or authorized academic officer. Current temporary grades of I, R, and X can be changed by the instructor directly with the Office of the Registrar to a final letter grade of: A, B, C, D, E, or S/U, if the class has a pass/fail grading basis of satisfactory/unsatisfactory. Temporary grades of I or R cannot be changed to another temporary or a non-letter, administrative grade of: I, R, NA, AU, W, or X. Other grade changes may require an additional level of approval by an academic officer or appeals committee. Changes to final grades cannot be made once a degree has been posted for the career in which the course was taken, or in the case of a student’s voluntary separation from the University.

Grade Point Average

The grade point average (GPA) is determined by dividing the total number of grade points earned by the total number of graded semester hours. Graded semester hours include courses graded A, B, C, D, and E. All courses taken at IIT apply to the cumulative GPA, including those that do not apply toward graduation.

Repeating Courses for a Grade Change

Undergraduate students may repeat a course for a change of grade. A request to repeat a course for a change of grade must be submitted through the DegreeWorks, channel in the IIT Portal, during registration. Both grades will be recorded on all transcripts issued. Only the second grade will be used to compute the GPA, even if the second grade is lower, except when the second grade is I, R, S, U, W, X, or AU. The course repeat policy is as follows:

- Both the grade and credit hours are removed if a course is repeated for a grade change.
- A course repeated for a grade change must be taken within one calendar year after initial enrollment in that course or the next time it is offered (whichever is longer).
- The same course may be repeated only once for a change of grade.
- No more than three courses may be repeated for a grade change in a student’s career.
- Re-registration for courses in which a student received a passing grade requires the approval of the student’s academic advisor and academic dean.
- If a course is no longer offered by the University, the provision to repeat the course for a grade change does not apply.

Graduate Course Enrollment Approval

All undergraduate students who wish to enroll in a graduate 500-level course must obtain approval from their faculty advisor. All undergraduate students who enroll in graduate courses are governed by the graduate grading system for those courses.
Graduation Requirements

Every student is responsible for fulfilling graduation requirements as specified in the IIT Bulletin in effect at the time of his or her admission to IIT. If those curriculum requirements change before the student completes a specified degree program, he or she may follow a curriculum in a subsequent IIT Bulletin with the approval of his or her academic unit head. When an earlier curriculum is no longer available, the individual degree program of a student who has been following this earlier curriculum will be modified by his or her academic unit head.

The student has the ultimate responsibility to fulfill degree requirements, to attain eligibility to enroll in particular courses, and to comply with all applicable academic rules governing his or her academic program.

NOTE: Students must file an Application for Graduation Form at the beginning of the semester in which they plan to graduate. Failure to do so may result in the postponement of the student’s graduation. Please refer to the IIT Calendar on page 3 for specific deadlines.

Undergraduate students must complete:

- All required courses in their major program.
- Credit hour requirements as appropriate to their major (a minimum of 126 hours).
- Core Curriculum and special academic requirements as shown on page 25.
- Residence requirements as outlined on page 280.
- A minimum cumulative GPA of 2.00 and a minimum GPA of 2.00 in the student’s major department courses. A student who completes all course requirements with an average below the minimum grade point requirements may, with permission of his or her department chair and academic dean, take additional courses to raise the GPA.
- Completion of all the above within a period of eight calendar years from the semester of initial admission for full-time students or 12 calendar years for part-time students after achieving degree-seeking status. A student may petition their major department and academic dean to have this period extended. If the petition is approved, this extension may involve additional compensating academic requirements.
- Payment of all financial obligations to the University.

All incomplete coursework must be submitted to the instructor prior to the date of graduation. A recorded grade of I (incomplete) in a course required for graduation will result in deferral of that student’s graduation until the next semester. A new application for graduation must be submitted for that semester.

Graduation with Honors

A student must complete a minimum of 60 graded semester hours at IIT in order to receive the award of “summa cum laude”, “magna cum laude”, or “cum laude”. A student who has a GPA of 3.90 and higher will graduate with “summa cum laude” honors; a student who has a GPA between 3.80-3.899 will graduate with “magna cum laude” honors; and a student who has a GPA between 3.50-3.799 will graduate with “cum laude” honors.

Leave of Absence

Undergraduate degree-seeking students who wish to withdraw from the University with the intention of returning to complete their degree program may apply for a Leave of Absence. All requests for a Leave of Absence begin with the One Stop. This designation cannot exceed one academic year; however, it may be extended if the proper documentation is submitted. The Leave of Absence form can be found on the Academic Affairs channel in the IIT Portal.

Students on a medical Leave of Absence may be required to contact the Student Health and Wellness Center and/or submit documentation from a health care professional relating to treatment prior to resuming their studies.

International students must comply with additional regulations when requesting a Leave of Absence. See www.iit.edu/~internat for additional details.

The Leave of Absence policy is explained in more detail in the IIT Student Handbook.
Return from Leave

Students wishing to return from a Leave of Absence should contact the One Stop (onestop@iit.edu) to begin the process. The request for Return from Leave and all supporting documents must be submitted prior to the deadline specified on the IIT Calendar.

Students must submit official transcripts from all colleges and universities attended since last enrolled at IIT. In some cases, additional interviews may be required to process a Return from Leave.

International students must contact the International Center in addition to submitting a request to Return from Leave. See www.iit.edu/~internat.

Registration

Registration and Class Attendance

Students are required to be registered for all classes in which they participate, attend, and/or submit coursework for evaluation. No credit will be granted for any course for which the student did not properly register before the last day to add a class for the semester. Students are required to be registered to make use of university facilities. Students who are in an exchange, study abroad, or cooperative education program also must be registered for their particular programs.

All students are expected to attend classes regularly. Excessive absences may be grounds for a failing grade. Non-attendance does not constitute an official withdrawal. When illness or emergency requires a student to miss more than two days of class, the student must notify the course instructor. It is also recommended that the student contact the dean of students and the director of undergraduate advising.

Priority Registration

Undergraduate students are allowed to register for an upcoming term based on their student classification (see page 281), which is determined by earned credit hours. In-progress credit hours are not used in determining registration priority. All graduate students, U5 (fifth-year) undergraduates, and U4 (fourth-year) undergraduates can register on the first day of registration. All U3 (third-year) undergraduates can register on the second day of registration. All U2 (second-year) undergraduates can register on the third day of registration. All U1 (first-year) undergraduates can register on the fourth day. Open registration begins on the fifth day for all other students.

Registration Holds and Controls

Students with unpaid balances, disciplinary sanctions, unmet immunization requirements, or other such conditions to warrant a registration hold are prevented from enrolling in classes until the condition is resolved and the hold is removed.

Registration controls including prerequisites, corequisites, maximum hours, level, and program restrictions may also exist to limit or prevent registration in specific circumstances. Students should consult their advisor, resolve all holds, and take note of any registration restrictions that pertain to their student status and course selection, prior to their appointed registration date for an upcoming term.

For more information, go to www.iit.edu/registrar/registration_tools.

Residence Requirements

All undergraduate degree-seeking students must observe the following residence requirements:

- Once enrolled at IIT, a student is not permitted to enroll at another institution without obtaining permission. A student must submit an academic petition to the Office of Undergraduate Academic Affairs for approval prior to registration at another institution.
- A course failed at IIT must be repeated at IIT. No transfer credit will be awarded for any course equivalent to a course failed at IIT.
- The final 45 semester hours of work must be completed in residence at IIT. Any proficiency examinations or enrollment at another institution must be completed before this period.
- A student must complete a minimum of 45 semester hours at IIT in order to be eligible for a Bachelor's degree from IIT.
Second Bachelor’s Degree

A student whose first degree is granted by IIT must complete a minimum of 15 additional credit hours at IIT. A student whose first degree was awarded by another institution must complete a minimum of 45 additional credit hours at IIT. All other graduation requirements apply for the second degree. The GPA required for “summa cum laude”, “magna cum laude”, and “cum laude” for the second degree includes all IIT coursework.

Student Academic Petitions

A student may request a review of decisions concerning academic status or regulations by submitting an academic petition to the Office of Undergraduate Academic Affairs. Students who wish to take a course at another institution during the summer must submit an academic petition to the Office of Undergraduate Academic Affairs prior to the registration at another institution to guarantee transfer of credit in accordance with university policies.

Student Classification

The following table describes classifications for undergraduate students currently in effect at the Illinois Institute of Technology. Classification is based on total earned hours in a student’s undergraduate career.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Earned Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Year Undergraduate (U1)</td>
<td>0-29.9</td>
</tr>
<tr>
<td>Second-Year Undergraduate (U2)</td>
<td>30-59.9</td>
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<td>90-130.9</td>
</tr>
<tr>
<td>Fifth-Year Undergraduate (U5+)</td>
<td>131+</td>
</tr>
</tbody>
</table>

Transcripts

Official transcripts are requested through the Office of the Registrar and are only released with the expressed consent and authorization of the student, in compliance with (FERPA) the Family Educational Rights and Privacy Act of 1974. The secured document is certified as of the printing date and is not valid if altered in any way or opened by someone other than the intended recipient. Official transcripts are released only after the student has fulfilled all financial obligations to the University. Official transcripts issued directly to the student making the request are stamped “ISSUED TO STUDENT”. A fee is charged for each transcript issued.

Unit of Credit

Academic credit is recorded in semester hours. Each semester hour represents one 50-minute period per week for a 16-week semester. IIT follows the standard Carnegie Unit, requiring 750 contact minutes of instruction per credit hour, regardless of the length of the term.

Withdrawal from the University

Undergraduate degree-seeking students who withdraw from all of their courses are in effect withdrawing from the University. Non-attendance does not imply withdrawal. All requests for Withdrawal begin with the One Stop which will provide assistance with the successful resolution of all outstanding obligations to the University. The Withdrawal Form can be found in the Academic Affairs channel in the IIT Portal. International students must comply with additional regulations when withdrawing from the University. See www.iit.edu/~internat.

Any undergraduate student who is not in attendance for a semester must apply for Reinstatement in the Office of Undergraduate Academic Affairs.
Reinstatement

Students who have withdrawn and now wish to return to IIT should contact the Office of Undergraduate Academic Affairs (ugaa@iit.edu) to begin the process. The request for Reinstatement must be submitted prior to the deadline specified on the IIT calendar.

Students must submit official transcripts from all colleges and universities attended since last enrolled at IIT. In some cases, additional interviews may be required for Reinstatement.

International students must contact the International Center in addition to submitting an application for Reinstatement. See www.iit.edu/~internat for more information.
Fall/Summer 2015 ITM Undergraduate Advising Notes

General Advising Information

You should have received an email from Matt Bauer, IIT Director of Academic Advising, discussing the tiered registration schedule that will be in use for the Fall 2015 term. Just to reiterate, Summer and Fall student registration access will be activated according to your current standing—determined by credit hours completed—and the following schedule:

1. Mon, Apr 6, 8:30am: Graduate & U5 (5th Year Undergrad) & summer course for all students registration starts
2. Tues, Apr 7, 8:30am: U4 (4th Year Undergrad) registration starts
3. Wed, Apr 8, 8:30am: U3 (3rd Year Undergrad) registration starts
4. Thurs, Apr 9, 8:30am: U2 (2nd Year Undergrad) registration starts
5. Fri, Apr 10 8:30am: U1 (1st Year Undergrad), exchange, visiting, and non-degree student registration starts

Students with disabilities, varsity athletes and ROTC students will be notified of their registration date and time on a case-by-case basis. Class student standing for registration is based on earned hours, which does not include classes taken in the Spring 2015 semester.

Fall 2015 class schedules were available Monday March 23 and summer classes have been available for a while. You can view the class schedule either in the MyIIT Academics tab or in the "quick links" on www.iit.edu; you can also use the “secret faculty version” of the schedule at https://my105.iit.edu/coursestatuurse; just select your subjects from the drop-down box.

In order to see ALL ITM courses using MyIIT drop-down menus, you must hold down your CTRL key and select Information Tech and Mgmt, ITM Development, ITM Management, ITM Operations, ITM Security & ITM Theory and Technology.

Your adviser will have your Alternate PIN for registration. You do NOT need your new Alternate PIN to view the schedule for the Summer or Fall semester, only to drop/add classes.

For Professor Trygstad’s Advisees: I prefer to see all of my students for advising in person, so please try to come and see me during the advising period. I will not issue you your PIN for registration without some sort of advising, so if you have not at least had a conversation with me with me by telephone, email or carrier pigeon about the courses you would like to take, do not expect me to give you your PIN. Well, OK, probably not by carrier pigeon.

For Professor Hajek’s Advisees: Professor Hajek will be available for advising at the Rice Campus on Mondays noon-2pm, and on the Main Campus Tuesdays and Thursdays 11am-2pm.


ITM First Year Undergraduate (Freshman) Advising

Freshmen should enroll in a Natural Science or Engineering elective. Remember that two courses in Natural Science or Engineering must be in the same subject area.

Freshmen should take a humanities elective, i.e. HUM 20X or take a lower social or behavioral science elective. Remember that you must take 9 hours of lower-level social or behavioral science and humanities (100/200) but it can be two humanities and one social or behavioral science or two social or behavioral science and one humanity.

ITM Current Second Year Undergraduate (Sophomore) Advising

Sophomore (U-2) students who entered the program as first year undergraduates (freshmen) need to start thinking about a minor as completion of a minor is required in your ITM program. It can be anything you want—I do think it would be amazing to see someone in IT minor in philosophy—but you really need to start thinking about this. An interesting new minor with a strong relationship to ITM is Digital Humanities.

Second year students who have completed three semesters at IIT may want to consider entering the Co-Terminal Degree program, which would allow you to earn a Master’s degree while you are an undergraduate; see page 5 in these notes for more details.

ITM Current Third Year Undergraduate (Junior) Advising

Junior (U-3) students who entered the program as first year undergraduates (freshmen) should be two or three courses into your minor since completion of a minor is required in your ITM program. If you are not, we seriously need to talk. Also, transfer students who have completed a semester at IIT may want to consider entering the Co-Terminal Degree program, which would allow you to earn a Master’s degree while you are an undergraduate; see page 5 in these notes for more details.
Appendix H

Fall/Summer 2015 ITM Undergraduate Advising Notes

**Humanities General Education Elective Selection**

Here are my (Professor Trygstad's) recommendations for Upper-Level Humanities General Education electives for Fall 2015 with my reasons. I can't promise a course will be good; I'm just trying to highlight the courses I believe would be of the most interest to ITM students. There are a lot of courses I think will interest you this term, and there are several early evening and evening humanities courses offered, so if you work full-time, grab 'em while you can! All courses are at Main Campus unless noted otherwise, and each section has 20 or 22 seats. All course data follows the format:

**CRN/Course Number/Days-Time/# of Seats/Bldg-Room/Instructor**

**Mass Media and Society:** Interesting topic; great instructor.
- 18689/COM 372-01/Tue-Thur 1:50pm-3:05pm/20/TBA/Greg Pulliam

**Social Media and Participatory Culture:** Hugely relevant to our profession by an expert in the field.
- 17922/COM 380-02/Mon-Wed 11:25am-12:40pm/20/TBA/Libby Hemphill

**Rise of the Global Economy:** Val Martin is a good teacher who “gets” ITM students, it's another evening humanities course, and the only one at the Rice Campus.
- 18698/HIST 340-01/Thur 6:25pm-9:05pm/22/Rice Campus TBA/Val Martin

**History of Chicago:** You just can't believe how weird a place this really is until you dig into it like you will in this class. Convenient early evening time. Couple it with SSCI 220 Global Chicago for a 1-2 Chicago punch.
- 10876/HIST 352-01/Tue-Thur 5pm-6:15pm/20/TBA/Ralph Pugh

**History of Engineering:** Val Martin is a good teacher who “gets” ITM students, and it’s another evening humanities course.
- 17849/HIST 372-01/Tue 6:25pm-8:05pm/20/E1-025/Val Martin

**Disasters!:** As long as it didn’t affect you personally, there is very little more interesting in history than disasters! And, it’s an evening humanities course.
- 16682/HIST 374-01/Wed 5pm-7:40pm/20/TBA/Marie Hicks

**Topics:** The Holocaust: Learn about true evil and its impact on humanity, and it’s another evening humanities course.
- 17551/HIST 380-01/Thu 6:25pm-8:05pm/20/TBA/James Kollenbroich

**Digital Culture:** Should be the target 200-level humanities course for incoming ITM freshmen.
- 18685/HUM 208-01/Mon-Wed 1:50pm-3:05pm/20/TBA/Carly Kocurek
- 18705/HUM 208-02/Mon-Wed 3:15pm-4:30pm/20/TBA/Michael Deanda

**History of Video Gaming:** Couldn’t be much more geek/nerd than this. This one will fill up fast.
- 10903/HUM 380-01/Mon-Wed 11:25am-12:40pm/20/TBA/Carly Kocurek

**Digital Labor:** Toiling at computers instead of in the coal mine: relevant to all of us, with a convenient early evening time.
- 10904/HUM 380-02/Thu 5pm-7:40pm/20/TBA/Marie Hicks

**Shakespeare on Stage & Screen:** Maybe you've never really tried Shakespeare; hey, the man was brilliant, probably did more than any other individual to shape modern English, and you will see him in a new perspective.
- 18707/LIT 339-01/Tues-Thur 11:25am-12:40pm/22/TBA/Andrew Roebeck

**Topics:** Sherlock Holmes: Interesting course taught by an ITM favorite instructor. Odd time and day but it might work out in your schedule.
- 18709/LIT 380-03/Fri 10:00am-12:40pm/22/TBA/Carrine Hannigan

**Great Philosophers:** Nietzsche: OK, so maybe you don't care about about Nietzsche, but the class is taught by the best teacher in the university so I guarantee it will be interesting, and the course will fill up fast.
- 11492/PHIL 311-01/Mon-Wed 1:50pm-3:05pm/22/TBA/John “Jack” Snapper

**Ethics:** Solid introductory course in the topic; good complement to ITMM 485. And it's another evening humanities course.
- 18711/PHIL 360-01/Mon 6:25pm-8:15pm/22/TBA/Michael Davis

**Social and Behavioral Science General Education Elective Selection**

Here are my recommendations for Social and Behavioral Science General Education electives for Fall 2015 with my reasons. All courses are at Main Campus unless noted otherwise. The Subject Code SSCI is applied to courses that formerly were cross-listed as both Political Science and Sociology, and can count as either for prerequisite and subject distribution purposes.

All course data follows the format:

**CRN/Course Number/Days-Time/# of Seats/Bldg-Room/Instructor**

**Politics of Science and Technology:** Good topic for folks in our profession.
- 18577/PS 332-01/Mon-Wed 1:50pm-3:05pm/27/Matthew Shapiro

**Global Chicago:** A look at Chicago's place on the world stage. Odd time and day but it might work out in your schedule.
- 18577/PS 332-01/Mon-Wed 1:50pm-3:05pm/27/Matthew Shapiro

**Politics:** Learning Theory: Great topic, especially if you ever want to teach someday; has prereq of PSYC 222
- 18665/PSYC 423-01/Tue-Thur 3:15pm-4:30pm/27/TBA/Jennifer Miller
WARNING: I have not listed them, but you may notice that there are two online Social/Behavioral Science electives in the fall term: ECON 423-02 Economic Analysis of Capital Investments and PSYC 481-02 Group & Leadership at Work. I do not recommend either class either live or online, despite the extreme scarcity of online general education electives. This is because experience has shown that if you take one of these courses and four other classes, ECON 423 or PSYC 481 will be as much work as your other four classes combined. I like John Twombly who teaches ECON 423 and Roya Ayman who teaches PSYC 481 and you probably would too—they are excellent teachers—but their expectations are extremely high as is the workload in their classes. If you really need to do a social science elective online AND you are not afraid of hard work (really hard work), then GO FOR IT. And remember, your adviser needs to enter a departmental permit for undergrads to register for any online courses.

Natural Science/Engineering and Mathematics General Education Elective Selection

Here are my recommendations for Mathematics and Natural Science/Engineering General Education electives for Fall 2015 with my reasons. All courses are at Main Campus. All courses are on Main Campus. All course data follows the format:

CRN/Course Number/Days-Time/# of Seats/Bldg-Room/Instructor

User Experience Research/Evaluation: Similar to ITMD 434 (or it’s upcoming replacement ITMD 362) but taught from a different perspective by an expert in the field. Great course for our profession.

18691/COM 381-01/Mon-Wed 1:50pm-3:05pm/10/TBA/Libby Hemphill

Astronomy: If you are completing most of your Natural Science/Engineering requirement through the Engineering Graphics track but need that one course in a different subject, this should be your choice.

18589/PHYS 120-01/Mon-Wed 10:00am-11:15am/20/TBA/Sally Laurent-Muehleisen

If you are following the EG sequence for your Natural Science/Engineering requirements, you should note that EG 325 and EG 425 are also offered this term.

Recommendations for Free Elective Selection

Here are my recommendations for free electives for Fall 2015 with my reasons. All courses are at Main Campus unless noted otherwise. All course data follows the format:

CRN/Course Number/Days-Time/# of Seats/Bldg-Room/Instructor

User Experience Research/Evaluation: Similar to ITMD 434 (or it’s upcoming replacement ITMD 362) but taught from a different perspective by an expert in the field. Great course for our profession.

18691/COM 381-01/Mon-Wed 1:50pm-3:05pm/10/TBA/Libby Hemphill

Nutrition and Wellness: Infrastructure maintenance, for what may be the most critical component in your personal information system—your body. Offered by the newest program in the School of Applied Technology, Food Safety & Technology.

15653/FST 201-01/Tues-Thur 10:00am-11:15am/20/TBA/Indika Edirisinghe

Fall 2015 IIT Common Core Elective Listing and Fall 2015 ITM Course Listing

I have included a complete list of what I view as all the applicable IIT Common Core courses for the Fall so you don’t have to track them all down yourself. I’ve also included a quick-reference of all ITM undergraduate courses for the Fall and Summer.

ITM (C) Course Fall Elective Selection

As you are pondering your choice of ITM electives, just a reminder: IIT’s general education requirements say that you have to take 15 hours of (C) coded courses in your major. These are courses with a significant written and oral communication component. Everyone will do three (C) coded courses (9 hours) as part of the ITM required courses, but this leaves 6 hours or two courses that must be (C) coded ITM electives. There are only six (C) coded elective courses in the undergraduate curriculum, and we are offering four of them in the Fall term; all of them are available online as well. All course data follows the format:

CRN/Course Number/Days-Time/# of Seats/Bldg-Room/Instructor

Fundamentals of Multimedia  is an overview examination of multimedia design and creation.

15841/ITMD 460-01/Fri 10:00am-12:40pm/15/TBA/Ray Trygstad
15843/ITMD 460-03/Internet/15/Online/Ray Trygstad

Web Site Application Development  introduces server-side Web programming, Web development frameworks and content management systems.

15849/ITMD 462-01/Wed 6:25pm-9:05pm/15/TBA/Faculty TBA
15851/ITMD 462-02/Internet/15/Online/Faculty TBA

Fundamentals of Management for Technical Professional  explores fundamentals of management for professionals in high-technology fields; it addresses the challenges of managing technical professionals and technology assets with a particular emphasis on budgeting and managerial accounting.

16383/ITMM 470-01/Tues-Thur 11:25am-12:40pm/5/TBA/Madeleine England
16384/ITMS 470-02/Internet/5/Online/Madeleine England

Cyber Security Management  is an in-depth look at the program creation, administration and management elements of information security at an enterprise level.

15861/ITMS 478-01/Thurs 6:25pm-9:05pm/15/TBA/Ray Trygstad
15863/ITMS 478-02/Internet/5/Online/Ray Trygstad

You need to make sure you get two of these courses in your program of study; this is a good opportunity to pick up them up.
Hot ITM electives for the Fall term. All course data follows the format:

**CRN/Course Number /Days-Time/# of Seats/Blgd-Room/Instructor**

**Enterprise Intelligent Device Technologies:** Windows 8 app development taught by senior Microsoft development professional Martin Schrady. Prereq is ITM 311 but 411 is preferred.

15838/ITMD 453-01 /Mon 6:25-9:05pm /7/TBA/Martin Schrady

Open-Source Intelligent Device Technologies: Android application development in Java. Prereq is ITM 311 but 411 is preferred.

17704/ITMD 455-01 /Thu 6:25-9:05pm /5/TBA/Peisong Huang

15839/ITMD 455-02 /Internet /5/Online/Peisong Huang

**Intermediate Web Application Development:** An introduction to C# and the Microsoft .Net framework; there are never enough .Net developers out there. Taught by senior Microsoft developer Raj Krishnan. Prereqs are ITMD 411 and ITMD 461.

15852/ITMD 463-01 /Tues 6:25pm-9:05pm /10/TBA/Raj Krishnan

15853/ITMD 463-02 /Internet /15/Online/Raj Krishnan

**Shell Scripting for System Administration:** Shell scripting in BASH, Perl, and Powershell to ease sysadmin tasks in all of the major operating systems. Taught by Sam Shamsuddin who is not only an experienced sysadmin but also a martial arts guru!

17183/ITMO 471-01 /Mon 6:25pm-9:05pm /12/Rice Campus/Sam Shamsuddin

17184/ITMO 471-02 /Internet /16/Online/Sam Shamsuddin

**Cloud Computing Technologies:** One of the most sought-after skills for new hires and a true indicator that you are a complete technology professional. Prerequisites are ITMD 411 and ITMO 456.

15827/ITMO 444-01 /Tues-Thur 10:00am-11:15am /10/TBA/Jeremy Hajek

15829/ITMO 444-02 /Internet /16/Online/Jeremy Hajek

**Open Source Operating Server Administration:** Linux system administration taught to the Linux Professional Institute LPIC-2 certification standard. Linux sysadmins are hot, hot, hot; there are Hostgator billboards all over town trying to hire them. Prerequisite is ITMO 456.

18646/ITMO 453-01 /Mon 1:50pm-5:25pm /5/Rice Campus RC-244/Jeremy Hajek

**Database Security:** Security and data center expert Bill Slater brings his expertise to the subject of how to secure enterprise data assets. Prereq is ITMO 421.

15916/ITMS 428-01 /Wed 6:25pm-9:05pm /6/TBA/William Slater

15918/ITMS 428-02 /Internet /5/Online/William Slater

**Vulnerability Analysis & Control:** The “ethical hacking” class. Prereq is ITMS 440; ITMO 456 is preferred. Students in the online section must attend the first and last class sessions live.

15944/ITMS 443-01 /Tues 5:30pm-9:05pm /8/RC-250/Kevin Vaccaro

15945/ITMS 443-02 /Internet /10/Online/Kevin Vaccaro

**Embedded Systems and Reconfigurable Logic Design:** The menu here includes a healthy serving of Arduino with maybe some Raspberry Pi for dessert, to teach you how to design, build and program embedded systems. You’ll complete a major project and present it in an event open to the public. Prereq is ITM 311.

16821/ITMT 492-01 /Tue-Thu 3:15pm-4:55pm /18/TS-2030/Jeremy Hajek

Note also that ITMS 448 Cyber Security Technologies will meet on Main Campus this fall.

### Summer 2015 ITM Undergraduate Courses

All course data follows the format:

**CRN/Crs #/Course Title/Day & Time/Session/# of Seats/Room/Instructor (topics)**

**Rice Campus Courses**

32639/ITM 301-01/Introduction to Operating Systems and Hardware I /Mon-Wed 5:00pm-8:35pm /B/22/Rice Campus 244/Louis McHugh (A+)

32639/ITM 311-01/Introduction to Software Development /Mon-Wed 6:25pm-9:05pm /B/18/Rice Campus 155/Sam Shamsuddin (Java)

31937/ITMO 456-01/Intro to Open Source OS (Linux)/Tues-Thur 3:00pm-5:40pm /B/22/Rice Campus 244/Ray Trygstad

**Main Campus Courses**

32639/ITM 301-01/Introduction to Operating Systems and Hardware I /Mon-Wed 5:00pm-9:05 /B/18/TS-2033/Blake Slater (A+)

31927/ITMO 413-01/Open-Source Programming/Mon-Wed 5:00pm-7:25pm /B/10/TBA/James Papdemos (Django & Python)

32686/ITMD 413-02/Open-Source Programming/Mon-Wed 1:30pm-5:00pm /A/10/TBA/Omar Aldawud (Ruby on Rails)


32642/ITMD 461-01/Internet Technologies & Web Design/Mon-Wed 6:25pm-9:05pm /B/15/TBA/Katherine Papdemos

31931/ITMM 470-01/Principles of Management for Technology Pros/Tues-Thur 3:00pm-6:10pm /A/10/TBA/Madeleine England

31933/ITMM 471-01/Project Management for ITM/Mon-Wed 8:50am-noon /A/10/TBA/Dennis Hood

32016/ITMS 479-01/Computer Security Incident Response/Mon-Wed 5:45pm-9:05pm /A/12/TBA/Bonnie Goinns (US CERT methodology)

32654/ITMS 479-02/Advanced Cyber Security Management/Mon-Wed 5:45pm-9:05pm /C/12/TBA/Bonnie Goinns (CISSP Domains)

31668/ITM 412-01/Introduction to Software Development/Online /B/18/Internet/Sam Shamsuddin (Java)

31928/ITM 413-02/Open-Source Programming/Online /B/10/Internet/James Papdemos (Django & Python)

32688/ITM 413-04/Open-Source Programming/Online /A/10/Internet/Omar Aldawud (Ruby on Rails)

32641/ITM 421-02/Data Modeling and Applications/Online /B/10/Internet/Luke Papdemos

32642/ITM 461-02/Internet Technologies & Web Design/Online /B/10/Internet/Katherine Papdemos

31932/ITMM 470-02/Principles of Management for Technical Professionals/Online /A/10/Internet/Madeleine England

31934/ITMM 471-02/Project Management for ITM/Online /A/10/Internet/Dennis Hood

32517/ITMD 456-02/Intro to Open Source OS (Linux)/Online /B/20/Internet/Ray Trygstad (not normally offered online)

32642/ITMD 463-02/Computer Security Incident Response/Online /A/5/Security/Bonnie Goinns (US CERT methodology)

32649/ITMS 479-04/Advanced Cyber Security Management/Online /C/5/Internet/Bonnie Goinns (CISSP Domains)

**Summer Session Dates:**

A May 19 to June 28

B June 2 to July 26

C June 30 to August 9

D May 19 to August 9

Read more about summer courses on the ITM Blog at [http://blogs.iit.edu/itm_loopback/](http://blogs.iit.edu/itm_loopback/).

A university business partner is looking for paid interns with knowledge of Ruby on Rails for an internship starting in July 2015 and running through December. Full details will be provided to all students enrolled in ITMD 413-03 or ITMD 413-04.
Summer 2015 Common Core Courses

I have included a complete list of what I view as all the applicable IIT Common Core courses for the Summer so you don’t have to track them all down yourself.

I actually recommend every single course the Humanities Department is offering this summer. (That will probably never happen again.) I especially recommend PHIL 363-01 Aesthetics, taught by John “Jack” Snapper, the best teacher at the university. But none are in the evening and one is in Scotland (a long commute).

For Social and Behavioral Sciences, I strongly recommend SOC 211, Introduction to the Sociology of Space taught by Ullica Segerstrale (she is not teaching this fall) which is actually at 5pm so working folks might be able to catch it. I also recommend SSCI 220 Global Chicago taught by Rebecca Steffenson. Note also that there is an online social science course, ECON 211-02 Principles of Economics, so even if you’re home for the summer you could still get a general ed course in.

EG 225 Engineering Graphics for Non-Engineers is offered this summer which is a nice opportunity.

Two courses are being taught in Scotland, HUM 380-01 Topics: International Cinema and PS 285 or PS 385 Scottish Politics. The instructors are good and it should be an interesting experience. The courses run July 11 to August 8; see details at http://www.iit.edu/news/iittoday/wp-content/uploads/2015/03/Summer-Program-Flyer_Scottish-Politics-Transnational-Cinema_Final.pdf

Co-Terminal Degree Programs

Co-terminal degree programs allow you to complete a Master’s degree at the same time that you are completing your Bachelor’s degree. This is made possible by allowing three courses in your undergraduate program to count towards the Master’s program as well. You maintain your undergraduate status and may maintain your undergraduate financial aid throughout the studies and receive both degrees at the same commencement. You must have a cumulative GPA of 3.25 to apply. Students who began their studies as first-year undergraduates (freshmen) may apply in their fourth semester of studies, while transfer students who transferred 30 or more hours may apply after the completion of their first full semester at IIT.

Full details, including instructions on how to apply, can be found at http://admissions.iit.edu/graduate/apply/co-terminal-degrees. Application is through MyIIT [ Academic ] Graduate Admission - Student. You may apply for the Master of Cyber Forensics and Security as well as the Master of Information Technology and Management.

Other Useful Information at Registration Time

Course Retakes for Grade Replacement: (limit of 3 for undergrads): You must submit an appeal using the petition process in Degreeworks. Undergraduate Academic Affairs will review it, contact your adviser if necessary, and notify you of approval or denial.

Financial Aid: Go here to schedule a meeting with a Financial Aid Counselor:
http://www.iit.edu/financial_aid/about/finaid_meeting.php Also, there is a collection of scholarship and financial aid resources available for use at Galvin Library: http://galvinlibrary.wordpress.com/2012/08/02/finding-financial-aid-resources-in-the-library/

Bookstore Online: http://iit.bncollege.com/

Petition for Transfer Credit Approval (includes summer courses taken at other institutions):
http://www.iit.edu/ugaa/services/pdfs/summer_petition.pdf and http://www.iit.edu/ugaa/transfer_credit/index.shtml

Official Academic Audits: A student can request an official academic audit by submitting a petition in Degreeworks.

Undergraduate Bulletin:

ITM Undergraduate Handbook:
## IIT Common Core Courses of Interest to ITM Students

(No guarantees or recommendations! It’s just a list.)

### Humanities

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### Fall 2015

IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

(Appendix H)

### CRN Course Code Course Title Dept Type Hrs Days Time Max Campus Location Primary Instructor

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### Fall 2015

IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

(Appendix H)
### IIT Common Core Courses of Interest to ITM Students

**Fall 2015**

(No guarantees or recommendations! It’s just a list.)

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- **Social and Behavioral Sciences**
- **Mathematics**
# IIT Common Core Courses of Interest to ITM Students

(No guarantees or recommendations! It's just a list.)

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## Appendix H

IIT Department of Information Technology & Management Program Self Study Report for CAC of ABET Accreditation
## IIT Common Core Courses of Interest to ITM Students

(No guarantees or recommendations! It's just a list.)

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### Humanities

### Social and Behavioral Sciences

### Natural Science and Engineering

### Free Electives

### Summer Session Dates:

- **A** May 19 to June 28
- **B** June 2 to July 26
- **C** June 30 to August 9
- **D** May 19 to August 9

IIT Department of Information Technology & Management
Program Self Study Report for CAC of ABET Accreditation

ITM Undergraduate Courses for Fall 2015

IIT School of Applied Technology

* indicates courses with no prerequisite requirements
CRN
13174
14974
16813
13175
17913
18409
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16820
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18660

Course Code
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* ITM 301-02
* ITM 301-03
* ITM 311-01
* ITM 311-02
* ITM 311-03
* ITM 312-01
ITMD 411-01
ITMD 411-02
ITMD 415-01
ITMD 415-02
* ITMD 421-01
* ITMD 421-02
ITMD 453-01
ITMD 455-01
ITMD 455-02
* ITMD 460-01
* ITMD 460-02
* ITMD 461-01
* ITMD 461-02
ITMD 462-01
ITMD 462-02
ITMD 463-01
ITMD 463-02
* ITMM 470-01
* ITMM 470-02
* ITMM 471-01
* ITMM 471-02
* ITMM 481-01
* ITMM 482-01
ITMO 417-01
ITMO 417-02
* ITMO 440-01
* ITMO 440-02
ITMO 444-01
ITMO 444-02
ITMO 453-01
* ITMO 456-01
* ITMO 456-02
ITMS 428-01
ITMS 428-02
ITMS 443-01
ITMS 443-02
ITMS 448-01
* ITMS 478-01
* ITMS 478-02
ITMT 491-150
ITMT 491-170
ITMT 492-01
* TECH 465-01

Appendix H

Course Title
Intro OS and Hardware I
Intro OS and Hardware I
Intro OS and Hardware I
Intro to Software Development
Intro to Software Development
Intro to Software Development
Intro Systems Sftwr Prgmng
Intermediate Software Devlpmnt
Intermediate Software Devlpmnt
Advanced Software Development
Advanced Software Development
Data Modeling and Applications
Data Modeling and Applications
Enterprise Intelligent Device
Open-Source Intelligent Device
Open-Source Intelligent Device
Fundamentals of Multimedia
Fundamentals of Multimedia
Internet Techlgies Web Design
Internet Techlgies Web Design
Web Site App Development
Web Site App Development
Intermediate Web App Develop
Intermediate Web App Develop
Fund of Mgmt for Tech Prof
Fund of Mgmt for Tech Prof
Project Management for ITM
Project Management for ITM
IT Entrepreneurship
Business Innovation
Shell Scripting for Sys Admin
Shell Scripting for Sys Admin
Intro Data Ntwrks and Internet
Intro Data Ntwrks and Internet
Cloud Computing Technologies
Cloud Computing Technologies
Open Source Server Admin
Intro Open Source OS
Intro Open Source OS
Database Security
Database Security
Vulnerability Analys and Ctrl
Vulnerability Analys and Ctrl
Cyber Security Technologies
Cyber Security Management
Cyber Security Management
Undergraduate Research
Undergraduate Research
Embedded Sys Reconfig Lgc Dsgn
Intro to Social Commerce

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Page 5 of 6
Page 279 of 282

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Location
TS-2033
RC-247
TS-2033
RC-244
TS-2033
RCRC-244
RCTS-2033
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Primary Instructor
Owrey, John
McHugh, Louis
Owrey, John
Shamsuddin, Sheikh
Papademas, James
Papademas, James
Papademas, Katherine
Papademas, James
Papademas, James
Spyrison, Scott
Spyrison, Scott
Papademas, Luke
Papademas, Luke
Schray, Martin
Huang, Peisong
Huang, Peisong
Trygstad, Raymond
Trygstad, Raymond
Bailey, Brian
Bailey, Brian
TBA, Faculty
TBA, Faculty
Krishnan, Raj
Krishnan, Raj
England, Madeleine
England, Madeleine
Hood, Dennis
Hood, Dennis
TBA, Faculty
England, Madeleine
Shamsuddin, Sheikh
Shamsuddin, Sheikh
Davids, Carol
Davids, Carol
Hajek, Jeremy
Hajek, Jeremy
Hajek, Jeremy
Hughes-Durkin, Sean
Hughes-Durkin, Sean
Slater, William
Slater, William
Vaccaro, Kevin
Vaccaro, Kevin
Davis, Shawn
Trygstad, Raymond
Trygstad, Raymond
Trygstad, Raymond
Hajek, Jeremy
Hajek, Jeremy
Mueller, Bruce


## ITM Undergraduate Courses, Summer 2015

* indicates courses with no prerequisite requirements

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### Rice Campus

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### Summer Session Dates:

- **A** May 19 to June 28
- **B** June 2 to July 26
- **C** June 30 to August 9
- **D** May 19 to August 9
Dear Mr. [Name]:

Your academic record indicates that you must complete the following courses:

<table>
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<td>TOTAL</td>
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Note 1) Remaining Soc Sci Elect must be chosen from either PSYC or SOC.

To be eligible for graduation, a student must file an "Application for Graduation" at the beginning of the semester in which he or she plans to graduate and satisfy all Institute policies and regulations. Refer to current Bulletin for specific filing deadlines.

Degree: Bachelor

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Cumulative GPA: 3.528

Audit inclusive of 2014 Summer

Total: 129

Gregory Welter
Signature Attesting to Compliance

By signing below, I attest to the following:

That the Department of Information Technology and Management has conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with ABET’s Criteria for Accrediting Computing Programs to include the General Criteria and any applicable Program Criteria, and the ABET Accreditation Policy and Procedure Manual.

C. Robert Carlson  
Dean’s Name (As indicated on the RFE)

Signature: [Signature]  
Date: June 30, 2015