Information Technology and Management Graduate Assessment Report 2017-2018

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Information Technology and Management Graduate Assessment Report 2017-2018

1. Identification of learning goal(s) assessed
    a. Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 1 and 2.
        i. The following program educational objective was evaluated in ITMD 510 Object-Oriented Application Development:
            1) Objective 1: Deliver optimal technical and policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus.
        ii. The following program educational objective was evaluated in ITMD 593 Embedded Systems:
            1) Objective 2: Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.
    b. Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 3.
        i. The following program educational objective was evaluated in ITMS 548 Cyber Security Technologies:
            1) Objective 3: Technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.
        ii. The following program educational objective was evaluated in ITMS 549 Cyber Security Technologies: Projects & Advanced Methods:
            1) Objective 3: Technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.
    c. In addition to the above, course objectives for each course were assessed.
2. Description of data collection methodology used
    a. Surveys: Data was collected via a survey with questions tailored for each course. Surveys assessed course outcomes and Program Educational Objectives. Program Educational Objectives assessed in this cycle are listed in paragraph 1 above. The population surveyed and the courses assessed were as follows:
        i. 84 surveys were collected in December 2017.
            1) MITM: ITMD 510 – 69 surveys
            2) MYCF: ITMS 548 – 15 surveys
        ii. 9 surveys were collected in May 2018.
            1) MITM: ITMT 593 – 5 surveys
            2) MYCF: ITMS 549 – 4 surveys
    b. Evaluation of assessments was completed in May of 2018.
3. Presentation of Results
    a. Full results of the surveys are presented in Appendix A and B to this report.

i. Fall 2017 total enrollment in courses surveyed was 122. 84 students responded. The total student response rate was 68.9%.

ii. Spring 2018 total enrollment in courses surveyed was 19. 9 students responded. The total student response rate was 47.4%.

4. Discussion of Survey Results

a. The assessments were evaluated by members of the ITM Curriculum Committee in May 2018. Evaluators included:

Ray Trygstad, ITM Associate Chair and Industry Professor
James Papademas, Industry Professor
Jeremy Hajek, Industry Associate Professor
C. Robert Carlson, ITM Chair and Professor

b. Summary of Main Findings and Conclusions

i. In all but one course , a majority of students agreed or strongly agreed in the survey that they had achieved the outcome or objective addressed in each question. Overall 69.6% of undergraduate students agreed or strongly agreed that they had achieved the outcome or objective addressed in each survey question, and 63% agreed or strongly agreed that they had achieved the degree Program Educational Outcomes. 90% of students in three of the four courses surveyed agreed or strongly agreed that they had achieved the degree Program Educational Outcomes.

2) There was only one course with significant exceptions to majority agree/strongly agree

a) ITMD 510: There was an average of 71% agree or strongly agree with no outcomes less than 51% agree or strongly agree.

b) ITMS 548: There was an average of 44% agree or strongly agree with three outcomes with less than 40% agree or strongly agree. An average of 37% of responses were neutral and in no case did more than 37% of the students agree or strongly disagree that they had failed to attain the objective or outcome. Four out of six questions had neutral responses ranging from 33-60%, and no question had less than 20% neutral responses. Reasons for the high level of neutral responses are addressed in paragraph 4.b.ii.2) below.

c) ITMT 593: There was an average of 74% agree or strongly agree with two of ten outcomes with only 20% agree or strongly agree. Two of ten questions had neutral responses of 40-60%, and only three questions had any students disagree or strongly disagree.

d) ITMS 549: There was an average of 100% agree or strongly agree with no outcomes with neutral, disagree, or strongly disagree responses.

3) In all but one course, there were only a very minimal scattered number of Disagree/ Strongly Disagree responses. In this assessment cycle, this typically represents one or two of respondents in each course. We believe this is a reasonable number of students who just “don’t get it” in most courses. In an ideal world there would be no responses at this level, but we judge this to be an acceptable level.

ii. Assessment of Program Educational Outcomes.

1) ITMD 510: *I am able to deliver optimal technical and policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus.* 68% of students agreed or strongly agreed that they had achieved this outcome, while 27% were neutral. This is a satisfactory assessment result that does not warrant changes or adjustments to the course.

2) ITMS 548: *I am able to technically secure enterprise information assets and resources to deter, detect and prevent the success of attacks and intrusions.* Only 20% of students agreed or strongly agreed that they had achieved this outcome, while 60% were neutral. This is an unsatisfactory assessment result that will be addressed by a restructuring of the course. In addition, while this is required course, the assessment evaluators determined that it is not the best course to measure this particular program outcome, which would be much better measured in ITMS 543 Vulnerability Analysis and Control.

   It is the opinion of the assessment evaluators that this outcome is possibly the result of students who do not have strong interest in research being required to take a strongly research-oriented course, and consequently not meeting their expectations for what should be in the course content. This also accounts for the high level of neutral responses to the course learning objectives. The restructuring of the course discussed in improvement plans below should solve this issue.

3) ITMT 593: *I am able to Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.* 100% of students agreed or strongly agreed that they had achieved this outcome. While this is based on a statistically insignificant number of surveys, it is still a very positive result that does not warrant changes or adjustments to the course.

4) ITMT 549: *I am able to technically secure enterprise information assets and resources to deter, detect and prevent the success of attacks and intrusions.* This question was inadvertently omitted from the survey, but based on the 100% of students who agreed or strongly agreed that they had achieved all other course outcomes, it can be inferred that this would have been a positive response. No changes or adjustments to the course would appear to be warranted.

5. Description of improvement plans

   a. No changes to the content or delivery of ITMD 510 are proposed or warranted as outcomes are being met and the course is properly meeting the appropriate role in the curriculum.

   b. No changes to the content or delivery of ITMT 593 are proposed or warranted as outcomes are being met and the course is properly meeting the appropriate role in the curriculum.

   c. No changes to the content or delivery of ITMS 549 are proposed or warranted as outcomes are being met and the course is properly meeting the appropriate role in the curriculum. In the future this course will only be available to students in the Master of Science in Applied Cybersecurity and Digital Forensics or pursuing

a research track in the Master of Cyber Forensics and Security or the Master of Information Technology and Management specialization in Computer and Information Security.

   d. ITMS 548 is being divided into research-track and non-research-track sections. Content of the course will be substantially the same, but only students in the Master of Science in Applied Cybersecurity and Digital Forensics or pursuing a research track in the Master of Cyber Forensics and Security will enroll in the research track section, which will include a project which will be carried forward into additional project or thesis research. Students not in a research track in the Master of Cyber Forensics and Security will enroll in a non-research section of the course, taught by a new instructor.

6. Assessment process recommendations

   a. Re-examine courses selected for assessment based on enrollment. Despite having a plan, there is little of significance to be gained in assessing outcomes in courses that have a statistically insignificant number of students enrolled.

7. Assessment Plan for Fall 2018

   a. Included in the attached *Information Technology and Management Assessment Plan Fall 2018 (Revision 2)*

   b. The ITM Department operates on a three-year assessment plan based on calendar years. A new plan is being drafted for 2019-2021 and will be submitted upon completion.

Fall 2017 ITM Course Assessment Analysis

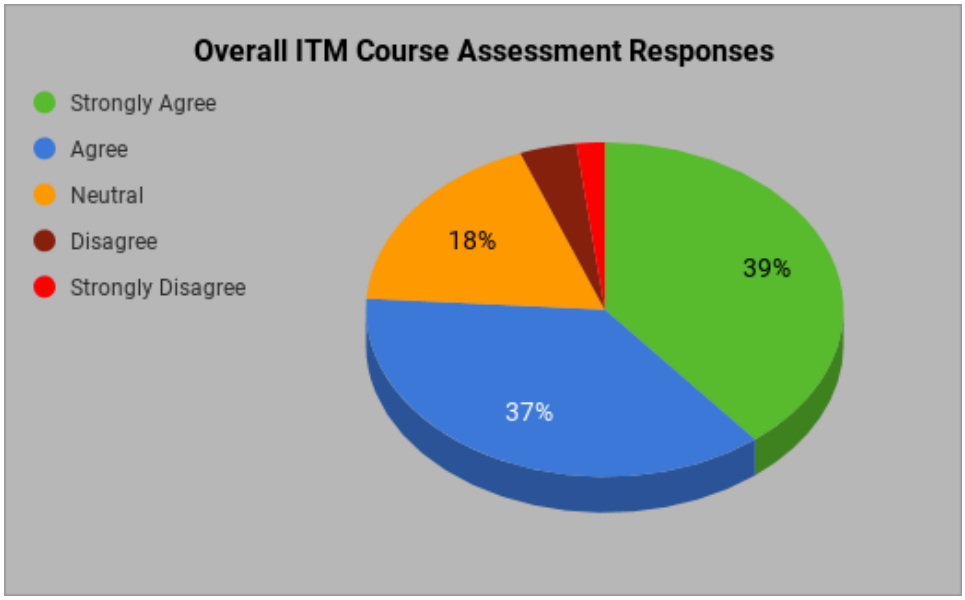
The Information Technology & Management (ITM) Assessment Plan for 2016 - 2018 assessed the following undergraduate and graduate courses:

ITM 301 Introduction to Contemporary Operating Systems and Hardware I
ITM 311 Introduction to Software Development
ITMM 471 Project Management for Information Technology & Management
ITMD 510 Object-Oriented Application Development
ITMS 548 Cyber Security Technologies

For undergraduate courses, assessment questions were created based on course outcomes on the syllabus, ABET student outcomes and the BITM Program Educational Objectives (both outcomes and objectives found on a separate tab) as defined by the ITM Department for the HLC.

For graduate courses, assessment questions were created based on course outcomes on the syllabus and the MITM Program Educational Objectives (found on a separate tab) as defined by the ITM Department for the HLC.

Total ITM Students Assessed	244
Total Assessment Respondents	163
Total Assessment Responses	1946
Assessment Participation Rate	67%



All assessment questions used the following scale:
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

ABET Student Outcomes

(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

(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

(j)(1) An ability to use and apply current technical concepts and practices in the core information technology of human computer interaction

(j)(3) An ability to use and apply current technical concepts and practices in the core information technology of programming.

(j)(5) An ability to use and apply current technical concepts and practices in the core information technology of web systems and technologies.

(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.

BITM Program Educational Objectives

1. Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.

2. Perform requirements analysis, design and administration of computer and network-based systems conforming to policy and best practices, and monitor and support continuing development of relevant policy and best practices as appropriate.

3. Apply current technical and mathematical concepts and practices in the core information technologies and recognize the need to engage in continuing professional development.

MITM Program Educational Objectives

1. Deliver optimal technical & policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus.

2. Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.

3. Manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting.

MCYF Program Educational Objectives

1. Design and implement a comprehensive enterprise security program using both policy and technology to implement technical, operational, and managerial controls.

2. Comprehensively investigate information security incidents and violation of law using computer resources in a manner such that all evidence is admissible in a court of law.

3. Technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.

Outcomes and objectives being assessed this term are highlighted in green.

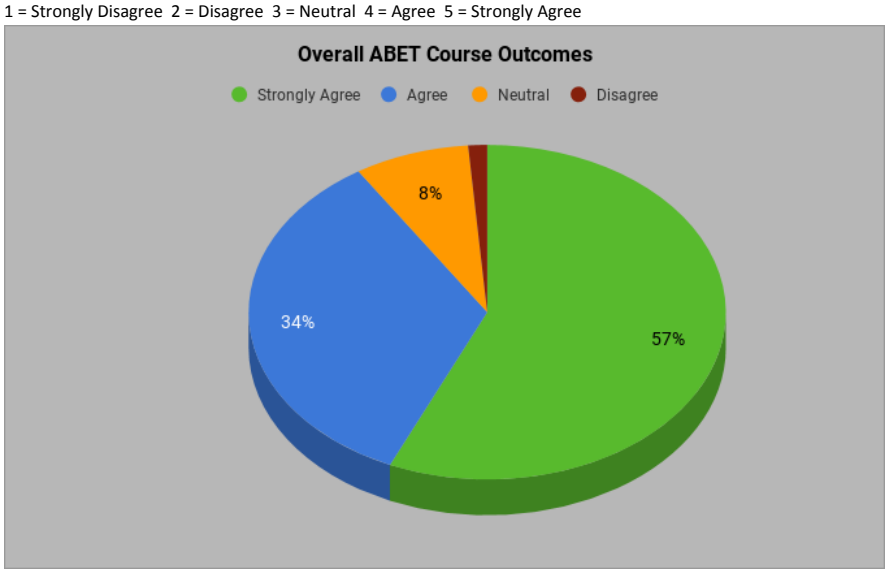
Fall 2017 ABET Student Outcomes Assessment Analysis

The Information Technology & Management (ITM) Assessment Plan for 2016 - 2018 assessed the following undergraduate courses:

ITM 301 Introduction to Contemporary Operating Systems and Hardware I
ITM 311 Introduction to Software Development
ITMM 471 Project Management for Information Technology & Management

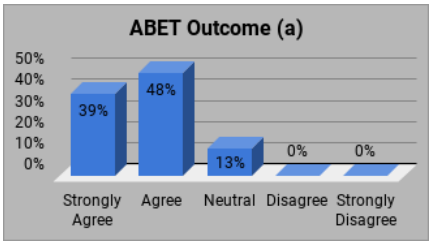
For undergraduate courses, assessment questions were created based on the following ABET student outcomes:
(a), (d), (e), (h), (l), (n)*

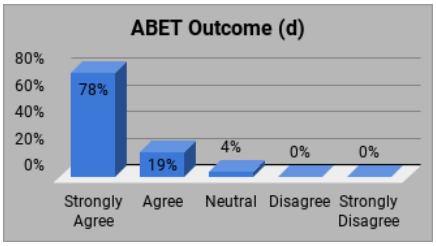
All assessment questions used the following scale:
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

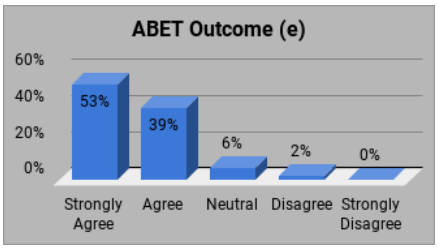


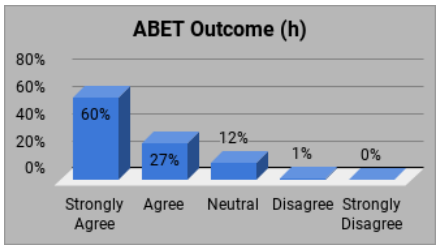
Total ITM Student Assessed	**122**
Total Assessment Respondents	**79**
Total Survey Responses	**1028**
Survey Participation Rate	**65%**

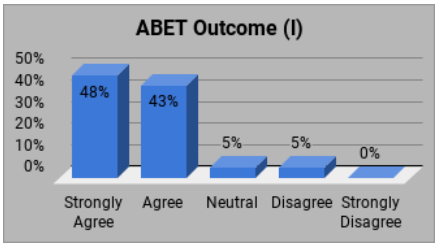
ALL ABET Outcomes Averaged	**57%**	**34%**	**8%**	**1%**	**0%**

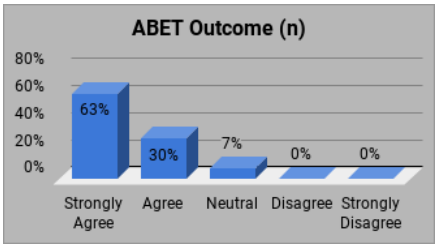












**A list of ABET Student Outcomes and BITM & MITM Program Educational Objectives can be found on a separate tab*

STUDENT COURSE ASSESSMENTS: FALL 2017

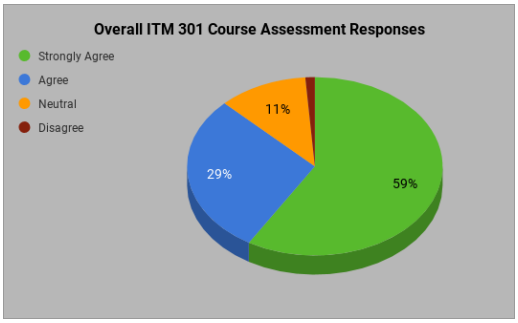
ITM 301 Introduction to Contemporary Operating Systems and Hardware I

Instructor: Billy Papademetriou

Fall Enrollment: 45 Assessments collected: 21

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
4.45

***ABET outcome**

Q1 This course gave me an understanding of the history of modern computing and the Internet.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
52%	38%	10%	0%	0%	0%	4.43

90% of students strongly agreed or agreed that they achieved this outcome.

Q2 I learned about electricity and power supplies related to computers.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
67%	19%	14%	0%	0%	0%	4.52

86% of students strongly agreed or agreed that they achieved this outcome.

Q3 I learned about how computers work and got an overview of processors.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
81%	14%	5%	0%	0%	0%	4.76

95% of students strongly agreed or agreed that they achieved this outcome.

Q4 This course gave me hands on experience working with motherboards, buses, architechture, memory, etc.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
95%	5%	0%	0%	0%	0%	4.95

100% of students strongly agreed or agreed that they achieved this outcome.

Q5 I learned about basic DOS Command Line Commands

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
57%	38%	5%	0%	0%	0%	4.52

95% of students strongly agreed or agreed that they achieved this outcome.

Q6 I learned about operating systems and architecture (Windows, Linux, Mac and Mobile OS)

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
52%	33%	14%	0%	0%	0%	4.38

86% of students strongly agreed or agreed that they achieved this outcome.

Q7 I learned to troubleshoot hardware and software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	33%	14%	5%	0%	0%	4.24

81% of students strongly agreed or agreed that they achieved this outcome.

Q8 I have an understanding of networking, physical media, devices, protocols and standards.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	29%	24%	0%	0%	0%	4.24

76% of students strongly agreed or agreed that they achieved this outcome.

Q9 I have an understanding of networking, physical media, devices, protocols and standards and OS Utilities and Cloud computing.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	24%	29%	0%	0%	0%	4.19

71% of students strongly agreed or agreed that they achieved this outcome.

Q10 I have knowledge of laws, regulations and compliance frameworks that affect IT professionals.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	33%	14%	5%	0%	0%	4.24

81% of students strongly agreed or agreed that they achieved this outcome.

Q11 Through this course, I learned about current events in computing, especially related to security.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
86%	14%	0%	0%	0%	0%	4.86

100% of students strongly agreed or agreed that they achieved this outcome.

Q12* This course helped me to understand professional, ethical, legal, security and social issues and responsibilities.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
57%	38%	5%	0%	0%	0%	4.52

95% of students strongly agreed or agreed that they achieved this outcome.

Q13* I recognize the need to engage in continuing professional development

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
62%	19%	19%	0%	0%	0%	4.43

81% of students strongly agreed or agreed that they achieved this outcome.

Q14* I am able to effectively integrate IT-based solutions into the user environment.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	43%	5%	5%	0%	0%	4.33

91% of students strongly agreed or agreed that they achieved this outcome.

Q15 Please rate your experience with the equipment in the lab section of your course.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
48%	38%	10%	5%	0%	0%	4.29

90% of students strongly agreed or agreed that they achieved this outcome.

Q16 Please rate your experience with the conditions of the lab facility.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	AVG
43%	43%	14%	0%	0%	0%	4.29

86% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: FALL 2017

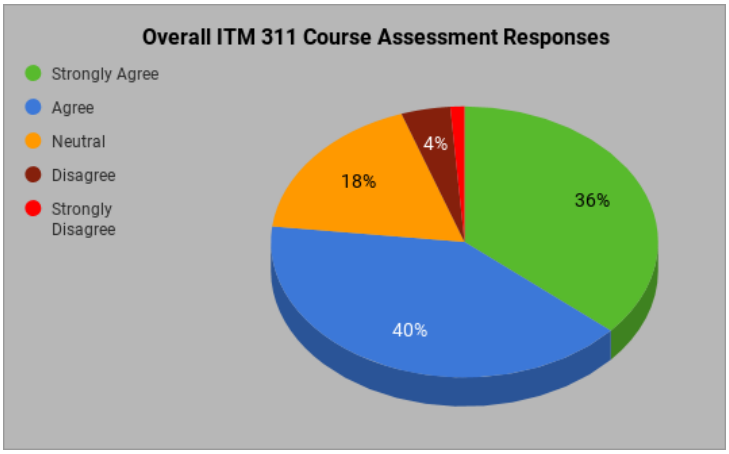
ITM 311 Introduction to Software Development

Instructor: Katherine Papademas

Fall Enrollment: 37 Assessments collected: 31

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
4.07

***ABET outcome**

Q1 I am able to write and resolve programming problems using Java language.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	45%	13%	3%	0%	0%	4.19

84% of students strongly agreed or agreed that they achieved this outcome.

Q2 I can build Java Applications and Java Applets.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
26%	45%	26%	3%	0%	0%	3.94

71% of students strongly agreed or agreed that they achieved this outcome.

Q3 I am able to identify Java standard libraries and classes.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
32%	42%	19%	6%	0%	0%	4.00

74% of students strongly agreed or agreed that they achieved this outcome.

Q4 I learned how to write, compile, execute and troubleshoot Java programming.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
48%	39%	10%	0%	3%	0%	4.29

87% of students strongly agreed or agreed that they achieved this outcome.

Q5 I understand and can utilize Java Graphical User Interface in the program writing.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	45%	13%	0%	3%	0%	4.16

84% of students strongly agreed or agreed that they achieved this outcome.

Q6 I have an understanding of Java programming syntax, control structures and Java programming concepts.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	39%	16%	6%	0%	0%	4.10

77% of students strongly agreed or agreed that they achieved this outcome.

Q7 I know how to locate and use Help Resources.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	26%	19%	13%	3%	0%	3.84

65% of students strongly agreed or agreed that they achieved this outcome.

Q8 I am confident in writing programs and "speaking" in Java.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
26%	42%	29%	3%	0%	0%	3.90

68% of students strongly agreed or agreed that they achieved this outcome.

Q9 I am familiar with the various IDEs used for Java Application Programming.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
29%	35%	26%	6%	3%	0%	3.81

65% of students strongly agreed or agreed that they achieved this outcome.

Q10* I can apply my knowledge of computing and mathematics within my discipline.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	48%	13%	0%	0%	0%	4.26

87% of students strongly agreed or agreed that they achieved this outcome.

Q11* I recognize the need to engage in continuing professional development

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
45%	39%	13%	3%	0%	0%	4.26

84% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: FALL 2017

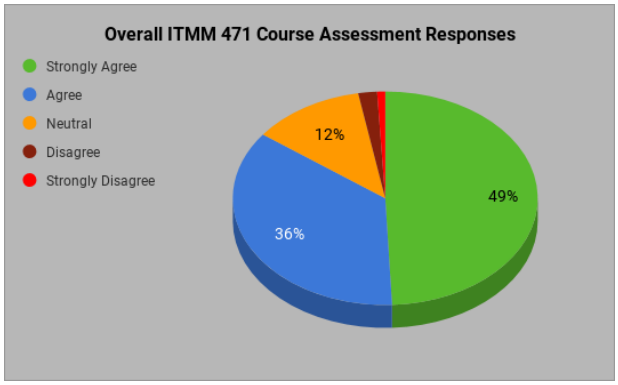
ITMM 471 Project Management for Information Technology & Management

Instructor: Kathy Harper

Fall Enrollment: 40 Assessments collected: 27

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
4.31

***ABET outcome #Program Educational Objective**

Q1 I can describe, using appropriate terminology, the current state and best practices of information technology project management.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
33%	33%	37%	7%	0%	0%	3.96

67% of students strongly agreed or agreed that they achieved this outcome.

Q2 I learned how to analyze project management decisions in terms of technical, cost-benefit and human resource considerations.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
37%	56%	7%	0%	0%	0%	4.30

93% of students strongly agreed or agreed that they achieved this outcome.

Q3 I am able to assess the risk exposure of an IT project and develop plans for mitigating and managing risks.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	30%	7%	0%	0%	0%	4.56

93% of students strongly agreed or agreed that they achieved this outcome.

Q4 This course taught me how to develop mechanisms for capturing and reporting objective measures of project progress.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
70%	22%	7%	0%	0%	0%	4.63

93% of students strongly agreed or agreed that they achieved this outcome.

Q5 I know how to apply frameworks for effective planning and decision making regarding IT project management.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
26%	52%	11%	7%	4%	0%	3.89

78% of students strongly agreed or agreed that they achieved this outcome.

Q6 I am able to describe the human resource, financial, and technical responsibilities of an IT project manager, including the unique challenges associated with outsourcing, off-shoring, and globalization.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
41%	48%	11%	0%	0%	0%	4.30

89% of students strongly agreed or agreed that they achieved this outcome.

Q7 I can discuss the impact of quality management and process maturity on IT project management.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
52%	30%	15%	4%	0%	0%	4.30

81% of students strongly agreed or agreed that they achieved this outcome.

Q8 I can discuss the role of portfolio management in realizing corporate strategic vision

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
22%	44%	26%	4%	4%	0%	3.78

67% of students strongly agreed or agreed that they achieved this outcome.

Q9# I can apply current technical and mathematical concepts and practices in the core information technologies.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
33%	37%	26%	0%	4%	0%	3.96

70% of students strongly agreed or agreed that they achieved this outcome.

Q10* I am able to function effectively on teams to accomplish a common goal.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
78%	19%	4%	0%	0%	0%	4.74

96% of students strongly agreed or agreed that they achieved this outcome.

Q11* I have the ability to assist in the creation of an effective project plan.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	30%	7%	0%	0%	0%	4.56

93% of students strongly agreed or agreed that they achieved this outcome.

Q12* I have an understanding of professional, ethical, legal, security and social issues and responsibilities

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
48%	41%	7%	4%	0%	0%	4.33

89% of students strongly agreed or agreed that they achieved this outcome.

Q13* I recognize the need to engage in continuing professional development

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
74%	22%	4%	0%	0%	0%	4.70

96% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: FALL 2017

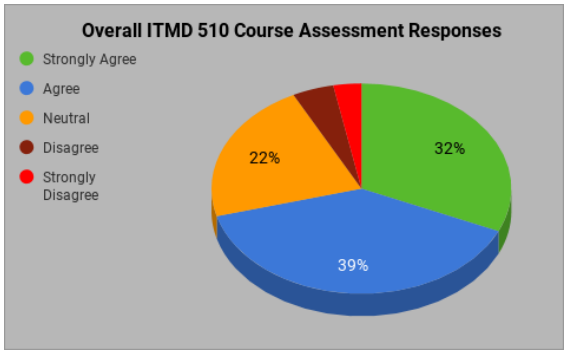
ITMD 510 Object-Oriented Application Development

Instructor: James Papademas

Fall Enrollment: 96 Assessments collected: 69

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking

3.92

***Program Educational Objective**

Q1 I learned to write Object Oriented Java Standard (SE) code.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
45%	41%	12%	0%	3%	0%	4.25

86% of students strongly agreed or agreed that they achieved this outcome.

Q2 I am able to create a Java based Graphical User Interface with JAVA FX.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
39%	46%	10%	1%	3%	0%	4.17

86% of students strongly agreed or agreed that they achieved this outcome.

Q3 I know how to locate application functionality from a JDBC API database.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
42%	30%	22%	3%	3%	0%	4.06

72% of students strongly agreed or agreed that they achieved this outcome.

Q4 I can author well-constructed code and software documentation.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
32%	48%	13%	4%	3%	0%	4.01

80% of students strongly agreed or agreed that they achieved this outcome.

Q5 I am able to utilize an IDE to develop, error trap, test and debug Java SE code.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
33%	42%	20%	1%	3%	0%	4.01

75% of students strongly agreed or agreed that they achieved this outcome.

Q6 I understand basic Object Oriented programming concepts including Inheritance, Encapsulation, Interfaces, Polymorphis

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
46%	35%	13%	3%	3%	0%	4.19

81% of students strongly agreed or agreed that they achieved this outcome.

Q7 I am able to apply test driven development methodologies including Junit testing.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	42%	28%	4%	3%	0%	3.78

65% of students strongly agreed or agreed that they achieved this outcome.

Q8 I understand packaging and deployment of Java SE.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
26%	42%	20%	7%	4%	0%	3.78

68% of students strongly agreed or agreed that they achieved this outcome.

Q9 I am able to perform file handling (IO) and file stream processing including knowledge of Socket Programming (NIO).

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
16%	35%	35%	10%	4%	0%	3.48

51% of students strongly agreed or agreed that they achieved this outcome.

Q10 I have knowledge of processing strings using Regular Expressions.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
28%	36%	29%	6%	1%	0%	3.83

64% of students strongly agreed or agreed that they achieved this outcome.

Q11 I can describe software development terminology such as Coupling and Cohesion.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	30%	35%	7%	4%	0%	3.61

54% of students strongly agreed or agreed that they achieved this outcome.

Q12* I am able to deliver optimal technical and policy technology solutions for the problems of business, industry, governmen

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
26%	42%	25%	6%	1%	0%	3.86

68% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: FALL 2017

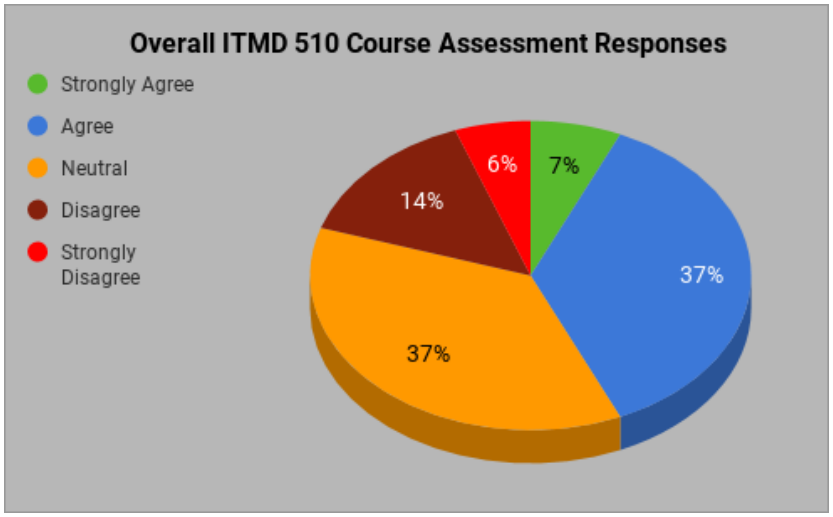
ITMS 548 Cyber Security Technologies

Instructor:Bill Lidinsky

Fall Enrollment: 26 Assessments collected: 15

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
3.24

***Program Education Objective**

Q1 This course gave me an in-depth understanding of network security and cryptography.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
13%	53%	20%	7%	7%	0%	3.60

71% of students strongly agreed or agreed that they achieved this outcome.

Q2 I feel confident that I can function in an entry or intermediate level security position.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
0%	53%	33%	7%	7%	0%	3.33

53% of students strongly agreed or agreed that they achieved this outcome.

Q3 This course has helped me to begin to prepare to acquire a Security+, SSCP, or other similar certification.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
7%	27%	33%	27%	7%	0%	3.00

34% of students strongly agreed or agreed that they achieved this outcome.

Q4 I have gained practical experience in the development of a security system.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
0%	27%	47%	20%	7%	0%	2.93

27% of students strongly agreed or agreed that they achieved this outcome.

Q5 I have significantly increased my knowledge in the specific facet of security associated with my team project.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
13%	47%	27%	13%	0%	0%	3.60

60% of students strongly agreed or agreed that they achieved this outcome.

Q6* I am able to technically secure enterprise information assets and resources to deter, detect and prevent the success of attacks and intrusions.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
7%	13%	60%	13%	7%	0%	3.00

20% of students strongly agreed or agreed that they achieved this outcome.

Spring 2018 ITM Course Assessment Analysis

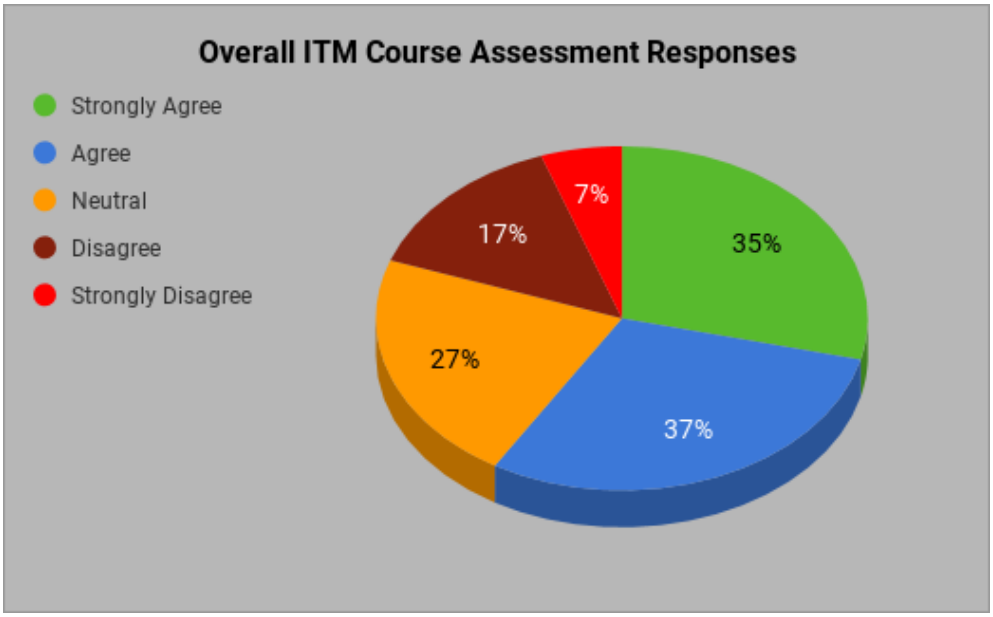
The Information Technology & Management (ITM) Assessment Plan for 2016 - 2018 assessed the following undergraduate and graduate courses:

ITMD 362 Human Computer Interaction and Web Design
ITMD 421 Data Modeling & Applications
ITMT 430 System Integration
ITMT 593 Embedded Systems
ITMS 549 Cyber Security Technologies: Projects & Advanced Methods

For undergraduate courses, assessment questions were created based on course outcomes on the syllabus, ITM Undergraduate Student outcomes and the BITM Program Educational Objectives (both outcomes and objectives found on a separate tab) as defined by the ITM Department for the HLC.

For graduate courses, assessment questions were created based on course outcomes on the syllabus and the MITM & MCYF Program Educational Objectives (found on a separate tab) as defined by the ITM Department for the HLC.

Total ITM Students Assessed	199
Total Assessment Respondents	107
Total Assessment Responses	1057
Assessment Participation Rate	54%



All assessment questions used the following scale:
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

ITM Undergraduate Student Outcomes

(a) Analyze a problem and identify and define the computing requirements appropriate to its solution

(b) Design, implement, and evaluate a computer-based solution to meet a given set of computing requirements

(c) Communicate effectively with a range of audiences about technical information

(d) Make informed judgments in computing practice based on legal and ethical principles

(e) Function effectively on teams to establish goals, plan tasks, meet deadlines, manage risk, and produce deliverables

(f) Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems

(g) Assist in the creation of an effective project plan

BITM Program Educational Objectives

1. Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.

2. Perform requirements analysis, design and administration of computer and network-based systems conforming to policy and best practices, and monitor and support continuing development of relevant policy and best practices as appropriate.

3. Apply current technical and mathematical concepts and practices in the core information technologies and recognize the need to engage in continuing professional development.

MITM Program Educational Objectives

1. Deliver optimal technical & policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus.

2. Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.

3. Manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting.

MCYF Program Educational Objectives

1. Design and implement a comprehensive enterprise security program using both policy and technology to implement technical, operational, and managerial controls.

2. Comprehensively investigate information security incidents and violation of law using computer resources in a manner such that all evidence is admissible in a court of law.

3. Technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.

NOTE: ITM Undergraduate Student Outcomes (a)-(f) are common with ABET Information Technology Criteria 3 Student Outcomes 1.-6. These outcomes are new for Fall 2018 and follow ***CAC 2018 -2019 Criteria Version 2.0*** *which will be mandatory in our next accreditation cycle.*

Green shading denotes outcomes and educational program objectives being assessed this term

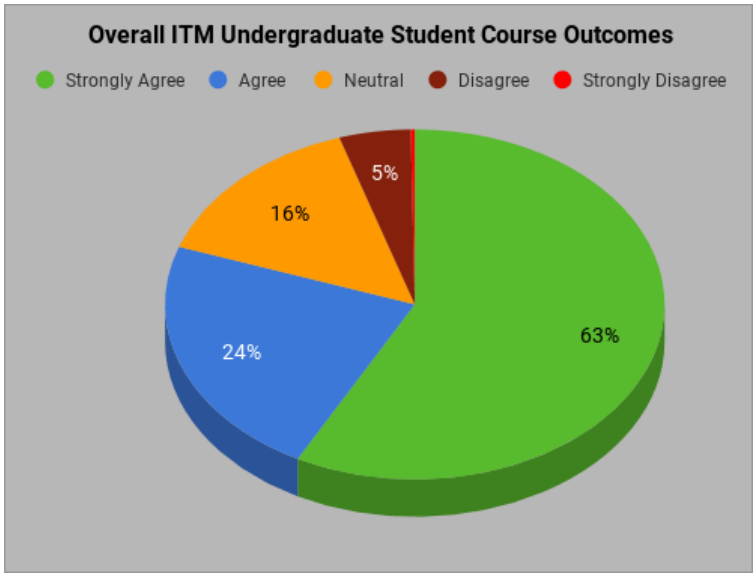
Spring 2018 ITM Student Outcomes Assessment Analysis

The Information Technology & Management (ITM) Assessment Plan for 2016 - 2018 assessed the following undergraduate courses:

ITMD 362 Human Computer Interaction and Web Design
ITMD 421 Data Modeling & Applications
ITMT 430 System Integration

For undergraduate courses, assessment questions were created based on the following ITM Undergraduate Student outcomes: (a), (b), (d), (f); these equate to ABET Criteria 3 Student Outcomes 1, 2, 4, 6 from CAC 2018 -2019 Criteria Version 2.0

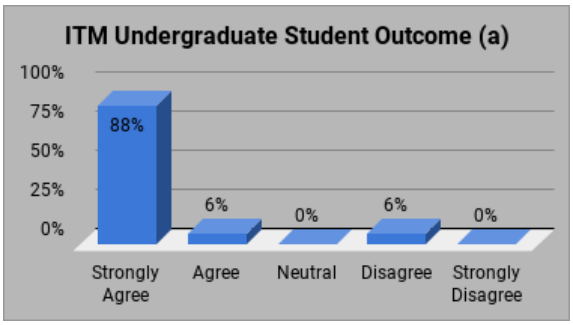
All assessment questions used the following scale:
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

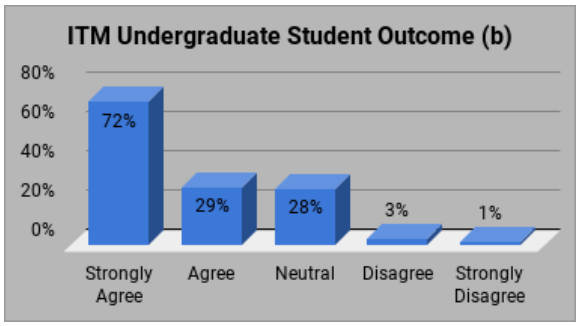


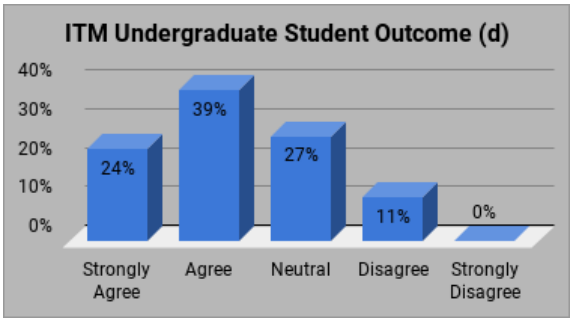
Total ITM Students Assessed	180
Total Assessment Respondents	98
Total Assessment Responses	458
Assessment Participation Rate	54%

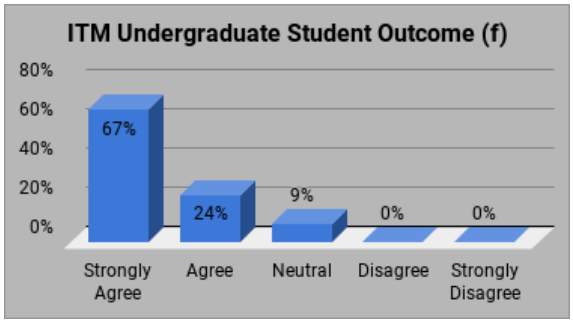
(One course section had only one respondant and was discarded.)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
ALL Student Outcomes Averaged	**63%**	**24%**	**16%**	**5%**	**0%**









**A list of ITM Undergraduate Student Outcomes and BITM & MITM Program Educational Objectives can be found on a separate tab*

STUDENT COURSE ASSESSMENTS: SPRING 2018

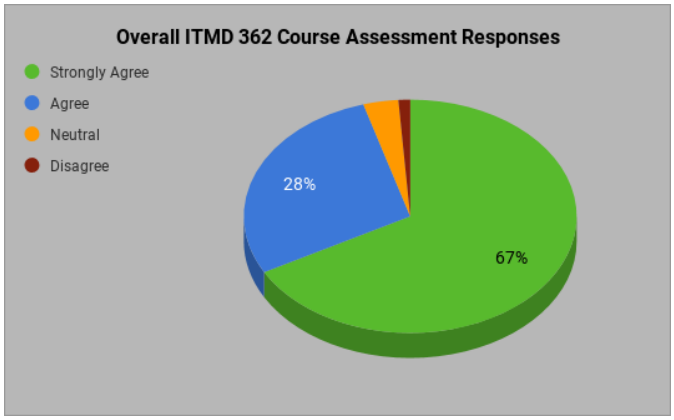
ITMD 362 Human Computer Interaction and Web Design

Instructor: Karl Stolley

Spring Enrollment: 32 Assessments collected: 8

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking

4.61

***ITM Undergraduate student outcome #Program Educational Objective**

Q1 I can describe the diversity of information system users and tasks, and their impact on design.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
50%	38%	13%	0%	0%	0%	4.38

88% of students strongly agreed or agreed that they achieved this outcome.

Q2 I can explain the need to evaluate system usability.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	38%	0%	0%	0%	0%	4.63

100% of students strongly agreed or agreed that they achieved this outcome.

Q3* I learned how to design, implement and evaluate a computer-based solution to meet a given set of computing requirements.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	25%	13%	0%	0%	0%	4.50

88% of students strongly agreed or agreed that they achieved this outcome.

Q4 I learned how to demonstrate the core concepts, applicability, and cost benefits of user-centered design.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
88%	13%	0%	0%	0%	0%	4.88

100% of students strongly agreed or agreed that they achieved this outcome.

Q5 I can demonstrate how user-centered concerns can be incorporated into system development life cycles.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	25%	13%	0%	0%	0%	4.50

88% of students strongly agreed or agreed that they achieved this outcome.

Q6 I learned how to explain the need to evaluate system usability and describe and apply general principles of design.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	0%	0%	0%	0%	0%	4.63

63% of students strongly agreed or agreed that they achieved this outcome.

Q7* I can identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	25%	0%	0%	0%	0%	4.75

100% of students strongly agreed or agreed that they achieved this outcome.

Q8 I can describe and execute touch-friendly, mobile-first responsive web design.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
88%	13%	0%	0%	0%	0%	4.88

100% of students strongly agreed or agreed that they achieved this outcome.

Q9 This course taught me to understand and apply core theories from human-computer interaction to web design and development.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
63%	38%	0%	0%	0%	0%	4.63

100% of students strongly agreed or agreed that they achieved this outcome.

Q10# I am able to problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
50%	50%	0%	0%	0%	0%	4.50

100% of students strongly agreed or agreed that they achieved this outcome.

Q11* I can analyze a problem and identify and define the computing requirements appropriate to its solution.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	13%	0%	13%	0%	0%	4.50

88% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: SPRING 2018

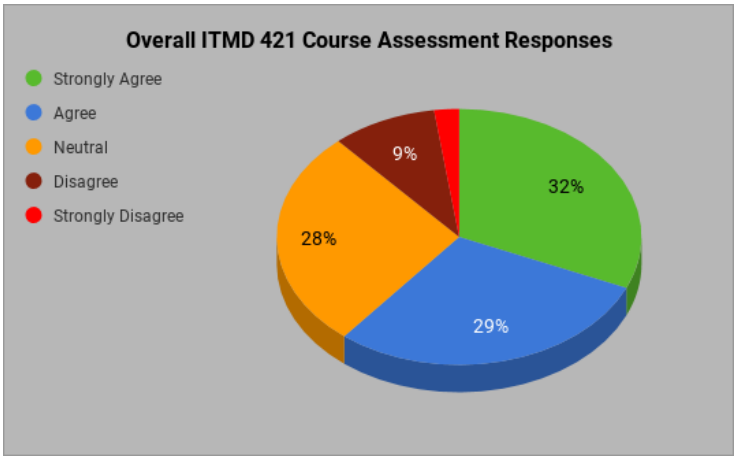
ITMD 421 Data Modeling and Applications

Instructor: Aastha Gupta

Spring Enrollment: 82 Assessments collected: 59

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
3.79

***ITM Undergraduate student outcome** **#Program Educational Objective**

Q1 I can describe the theoretical and physical concepts of a relational database.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
34%	36%	24%	5%	2%	0%	3.95

69% of students strongly agreed or agreed that they achieved this outcome.

Q2 I understand the design methodology for databases and can verify their structural correctness.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
34%	31%	29%	7%	0%	0%	3.92

64% of students strongly agreed or agreed that they achieved this outcome.

Q3 I learned querying language, primarily SQL, and their database related supported software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
51%	27%	20%	2%	0%	0%	4.27

78% of students strongly agreed or agreed that they achieved this outcome.

Q4 I can implement the theory behind the various database models and query languages.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
29%	34%	25%	10%	2%	0%	3.78

63% of students strongly agreed or agreed that they achieved this outcome.

Q5 I am able to design and build a simple database management system and demonstrate competence with the fundamental tasks involved with modeling, design, and implementing a DBMS.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
49%	24%	22%	5%	0%	0%	4.17

73% of students strongly agreed or agreed that they achieved this outcome.

Q6 I have developed an understanding of essential DBMS concepts, specifically database security, high availability, backup and recover and SQL database tuning.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	24%	36%	15%	5%	0%	3.39

44% of students strongly agreed or agreed that they achieved this outcome.

Q7* I can analyze a problem and identify and define the computing requirements appropriate to its solution.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
22%	25%	34%	14%	5%	0%	3.46

47% of students strongly agreed or agreed that they achieved this outcome.

Q8* I can design, implement and evaluate a computer-based solution to meet a given set of computing requirements.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
27%	29%	32%	8%	3%	0%	3.68

56% of students strongly agreed or agreed that they achieved this outcome.

Q9* I am able to make informed judgements in computing practice based on legal and ethical principles.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
24%	34%	27%	15%	0%	0%	3.66

58% of students strongly agreed or agreed that they achieved this outcome.

Q10# I can problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
25%	31%	27%	12%	5%	0%	3.59

56% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: SPRING 2018

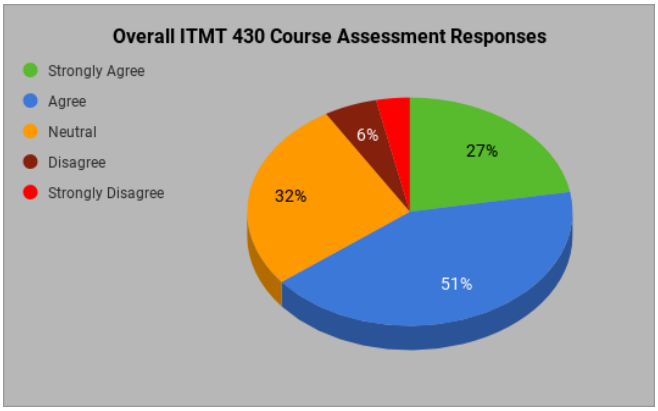
ITMT 430 System Integration

Instructor: Jeremy Hajek

Spring Enrollment: 42 Assessments collected: 30

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
3.75

***ITM Undergraduate student outcome #Program Educational Objective**

Q1 I can identify, gather, analyze, and write information system requirements based on user needs.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
10%	60%	20%	10%	0%	0%	3.70

70% of students strongly agreed or agreed that they achieved this outcome.

Q2 I learned to document integration requirements using business process models.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	33%	23%	13%	7%	0%	3.53

57% of students strongly agreed or agreed that they achieved this outcome.

Q3 I am able to design, construct, integrate , and implement an information system as a solution to a business problem.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	40%	33%	3%	3%	0%	3.70

60% of students strongly agreed or agreed that they achieved this outcome.

Q4 I learned how to apply key systems integration architecture, methodologies, and technologies in the construction of an information system using industry best practices.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	37%	37%	3%	3%	0%	3.67

57% of students strongly agreed or agreed that they achieved this outcome.

Q5 Based on identified user needs, I can demonstrate the use of user centered design in the selection, creation, evaluation, and administration of an information system.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
17%	57%	23%	0%	3%	0%	3.83

73% of students strongly agreed or agreed that they achieved this outcome.

Q6 I am able to recall and explain professional, ethical, legal, security, and social issues and responsibilities in information systems.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
37%	20%	20%	13%	10%	0%	3.60

57% of students strongly agreed or agreed that they achieved this outcome.

Q7 I can describe the local and global impact of computing on individuals, organizations, and society.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
17%	43%	30%	3%	7%	0%	3.60

60% of students strongly agreed or agreed that they achieved this outcome.

Q8 I am able to describe the need to engage in continuing professional development and explain how this may be achieved.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	57%	13%	3%	3%	0%	3.93

80% of students strongly agreed or agreed that they achieved this outcome.

Q9* I can design, implement, and evaluate a computer-based solution to meet a given set of computing requirements.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
27%	33%	40%	0%	0%	0%	3.87

60% of students strongly agreed or agreed that they achieved this outcome.

Q10* I learned how to make informed judgments in computing practice based on legal and ethical principles.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	43%	27%	7%	0%	0%	3.83

67% of students strongly agreed or agreed that they achieved this outcome.

Q 11* I know how to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
27%	47%	27%	0%	0%	0%	4.00

73% of students strongly agreed or agreed that they achieved this outcome.

Q12# I can problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
23%	37%	30%	7%	3%	0%	3.70

60% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: SPRING 2018

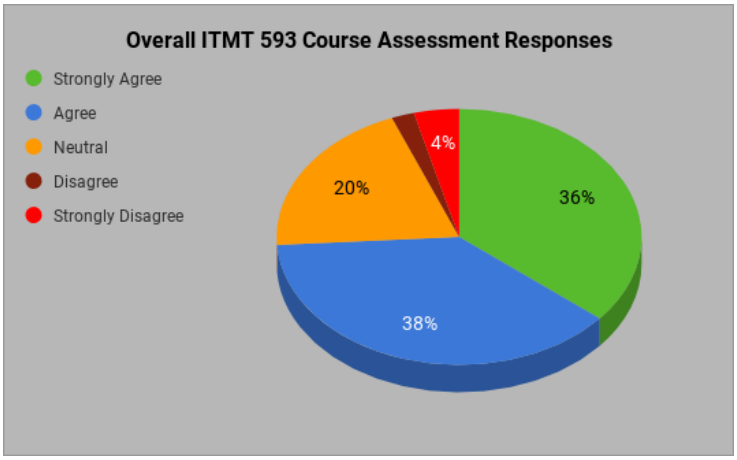
ITMT 593 Embedded Systems

Instructor: Jeremy Hajek

Spring Enrollment: 7 Assessments collected: 5

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
4.00

#Program Educational Objective

Q1 I have an understanding of and can apply the principles of electricity and electronics that support smart tech.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
60%	20%	20%	0%	0%	0%	4.40

80% of students strongly agreed or agreed that they achieved this outcome.

Q2 I can understand schematics, diagrams, and electronic symbols.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
0%	80%	20%	0%	0%	0%	3.80

80% of students strongly agreed or agreed that they achieved this outcome.

Q3 I now have an understanding of the concepts of Data Collection, Data Transmission, and Data presentation using small computers and sensor networks.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
60%	20%	20%	0%	0%	0%	4.40

80% of students strongly agreed or agreed that they achieved this outcome.

Q4 I understand the fundamentals and can demonstrate basic use of wireless communication standards:Bluetooth, NFC, xBee (802.15), Wi-Fi.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
40%	40%	20%	0%	0%	0%	4.20

80% of students strongly agreed or agreed that they achieved this outcome.

Q5 I understand the concepts of solar panels and LiPo batteries and how to deploy them.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
40%	60%	0%	0%	0%	0%	4.40

100% of students strongly agreed or agreed that they achieved this outcome.

Q6 I have an understanding of the basics of cloud data storage for smart technology.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	20%	40%	20%	0%	0%	3.40

40% of students strongly agreed or agreed that they achieved this outcome.

Q7 I understand the basics of Augmented Reality devices.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
60%	20%	0%	0%	20%	0%	4.00

80% of students strongly agreed or agreed that they achieved this outcome.

Q8 I learned how to use and have a basic working understanding of Voice Assistants.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	40%	20%	0%	20%	0%	3.40

60% of students strongly agreed or agreed that they achieved this outcome.

Q9 I can manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
20%	20%	60%	0%	0%	0%	3.60

40% of students strongly agreed or agreed that they achieved this outcome.

Q10# I am able to work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
40%	60%	0%	0%	0%	0%	4.40

100% of students strongly agreed or agreed that they achieved this outcome.

STUDENT COURSE ASSESSMENTS: SPRING 2018

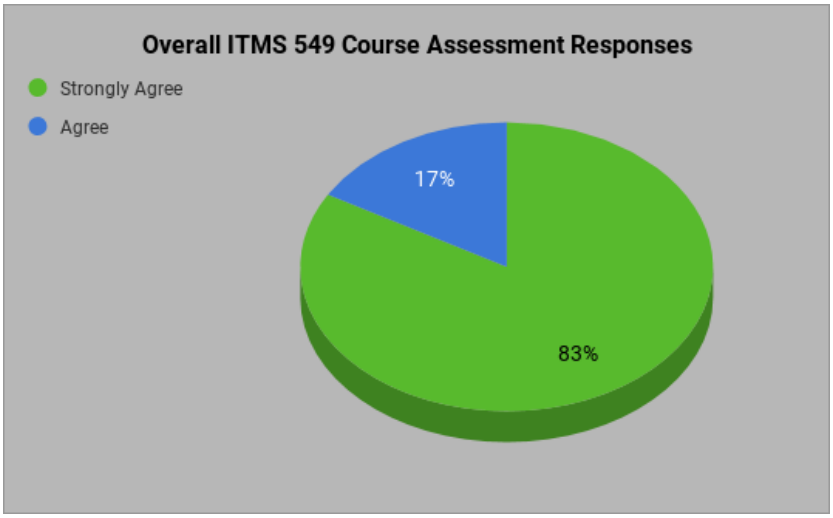
ITMS 549 Cyber Secuirty Technologies: Projects & Advanced Methods

Instructor: Bill Lidinsky

Spring Enrollment: 12 Assessments collected: 4

TALLIES: COURSE LEARNING OBJECTIVES

Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree



Overall Class Ranking
4.83

Q1 I am able to create a paper clearly describing their project, it's background and its results.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	25%	0%	0%	0%	0%	4.75

100% of students strongly agreed or agreed that they achieved this outcome.

Q2 I can demonstrate their project in an understandable manner.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	25%	0%	0%	0%	0%	4.75

100% of students strongly agreed or agreed that they achieved this outcome.

Q3 If appropriate, I learned how to create a user manual so that others can demonstrate.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
100%	0%	0%	0%	0%	0%	5.00

100% of students strongly agreed or agreed that they achieved this outcome.

Q4 I learned to create a user manual and technical paper that is sufficient to allow a knowledgeable person to reproduce the team's work.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	25%	0%	0%	0%	0%	4.75

100% of students strongly agreed or agreed that they achieved this outcome.

Q5 I am able to create a clear presentation of their work for presentation at a professional conference.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
75%	25%	0%	0%	0%	0%	4.75

100% of students strongly agreed or agreed that they achieved this outcome.

Q6 I presented and and demonstrated the team's project at the ForenSecure '18 conference in April 2018.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Left blank	***AVG***
100%	0%	0%	0%	0%	0%	5.00

100% of students strongly agreed or agreed that they achieved this outcome.

Information Technology and Management Assessment Plan for Graduate Degrees, 2016-2018 (Revision 2)

Assessment plans for 2016-2018 will adhere to the rubric as defined by the IIT Assessment Report Evaluation Rubric. One Program Educational Objective in each degree program will be assessed each term, and all objectives will be assessed twice in each three-year cycle. The full list of Program Educational Objectives to be assessed follows beginning on page 2 below. In addition to the Program Educational Objective, course objectives for each course will be assessed.
Separate roll-out strategies will be used for the undergraduate and graduate programs.
This document addresses the courses in the Graduate Program.

Spring 2016:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 1 & 3
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 2
Student Artifacts: Survey / April 2016 / Survey by Amber Chatellier & Angela Jarka
55 artifacts collected / Evaluation pending. Evaluators: Trygstad, Hajek, Papademas
Courses assessed:

Curricular Area	***Course***	
Software Development (MITM)	ITMD 510	Object-Oriented Application Development
Business Development (MITM)	ITMM 571	Project Management for ITM
Security & Forensics (MCYF)	ITMS 539	Steganography
Security Technologies (MCYF)	ITMS 549	Cyber Security Technologies: Projects & Advanced Methods

Fall 2016:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 1
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 1
Student Artifacts: Survey / November 2016 / Survey by Amber Chatellier & Angela Jarka
Assignments / December 2016 / Evaluators: Trygstad, Hajek, Zheng
Courses assessed:

Curricular Area	***Course***	
System Technologies (MITM)	ITMO 540	Introduction to Data Networks and the Internet
Security Management (MCYF)	ITMS 578	Cyber Security Management

Spring 2017:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 2
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 3
Student Artifacts: Survey / April 2017 / Evaluation by ITM Curriculum Committee
Assignments / May 2017 / Evaluators TBD
Courses assessed:

Curricular Area	***Course***	
System Technologies (MITM)	ITMO 554	Operating Systems Virtualization
Security Technologies (MCYF)	ITMS 558	Operating Systems Security

Fall 2017:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 1
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 3
Student Artifacts: Survey / November 2017 / Evaluation by ITM Curriculum Committee
Assignments / December 2017 / Evaluators TBD
Courses assessed:

Curricular Area	***Course***	
Software Development (MITM)	ITMD 510	Object-Oriented Application Development
Security Technologies (MCYF)	ITMS 548	Cyber Security Technologies

Spring 2018:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 3
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 2
Student Artifacts: Survey / April 2018 / Evaluation by ITM Curriculum Committee
Assignments / May 2018 / Evaluators TBD
Courses assessed:

Curricular Area	***Course***	
Software Development (MITM)	ITMT 593	Embedded Systems
Security Technologies (MCYF)	ITMS 549	Cyber Security Technologies: Projects & Advanced Methods

Fall 2018:
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 3
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 1
Student Artifacts: Survey / November 2018 / Evaluation by ITM Curriculum Committee
Assignments / December 2018 / Evaluators TBD
Courses assessed:

Curricular Area	***Course***	
System Technologies (MITM)	ITMO 556	Introduction Open Source Software
Security Management (MCYF)	ITMS 578	Cyber Security Management

The following program education objectives will be assessed for HLC accreditation purposes:

Master of Information Technology and Management (MITM) Program Educational Objectives
At the conclusion of their studies, graduates of the Master of Information Technology and Management should be able to:
1. Deliver optimal technical and policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus.
2. Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions.
3. Manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting.

Master of Cyber Forensics and Security (MCYF) Program Educational Objectives
At the conclusion of their studies, graduates of the Master of Cyber Forensics and Security degree should be able to:
1. Design and implement a comprehensive enterprise security program using both policy and technology to implement technical, operational, and managerial controls.
2. Comprehensively investigate information security incidents and violation of law using computer resources in a manner such that all evidence is admissible in a court of law.
3. Technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.

Survey drafting and data collection staff:

Amber Chatellier, ITM Department Manager
Angela Jarka, ITM Assistant Department Coordinator

Assessment Evaluators:

ITM Curriculum Committee

The Curriculum Committee evaluates Survey Artifacts and makes recommendations based on evaluations of all assessment artifacts. All full-time faculty members are voting members of the committee should they elect to participate.

Chair: Ray Trygstad, ITM Associate Chair and Industry Professor
Members: Jeremy Hajek, Industry Associate Professor
Louis F. McHugh IV, SAT IT Director and Adjunct Industry Associate Professor
Thomas "T.J." Johnson, Adjunct Industry Professor
Sheik "Sam" Shamsuddin, Adjunct Industry Professor; College of DuPage Professor and Computer Information System Program Coordinator
Faculty: C. Robert Carlson, ITM Chair and Professor
Karl Stolley, Associate Professor (joint appointment)
Adarsh Arora, Coleman Entrepreneur-in-Residence and Industry Professor
William Lidinsky, Interim Director, Center for Cyber Security and Forensics Education and Industry Professor
James Pappademas, Industry Professor
Yong Zheng, Senior Lecturer

All full-time faculty members may be appointed as assessment evaluators for Assignment Artifacts. Appointments will be made at the beginning of each term in which assignments will be assessed, and the Assessment Plan will be updated to reflect these appointments.

Information Technology and Management Assessment Plan **Fall 2018** (Revision 2)

Undergraduate Assessment, Fall 2018:
Based on *Information Technology and Management Assessment Plan for Undergraduate Degrees, 2016-2018 (Revision 4)* http://itm.iit.edu/faculty/2016-2018ITMUndergraduateAssessmentPlan(Rev4).pdf and *Bachelor of Science in Applied Cybersecurity and Information Technology Assessment Plan, 2018-2019 (Revision 1)* http://itm.iit.edu/faculty/2018-20198BSACITAssessmentPlanRev1.pdf
Program Educational Objectives Assessed: BITM/BSACIT 2 and BSACIT 3
New Student Outcomes Assessed: BITM/BSACIT (b), (c), (f), and BSACIT (h)
Student Artifacts: Survey / December 2018 / Evaluation by ITM Curriculum Committee
Assignments / December 2018 / Evaluators: Trygstad/Arora/Dawson
Courses assessed:

Curricular Area	***Course***
Software Development	ITMD 411 Intermediate Software Development
Networking and Communications	ITMO 440 Introduction to Data Networks and the Internet
System/Data Security	ITMS 448 Cyber Security Technologies
Human/Organizational/Societal Security	ITMS 478 Cyber Security Management

The following BITM/BSACIT program education objective will be evaluated:

2. Perform requirements analysis, design and administration of computer and network-based systems conforming to policy and best practices, and monitor and support continuing development of relevant policy and best practices as appropriate.

The following BSACIT program education elective will be evaluated in ITMS courses:

3. Design and implement an enterprise security program using both policy and technology to implement technical, operational, and managerial controls, which will technically secure enterprise information assets and resources to deter, detect, and prevent the success of attacks and intrusions.

The following BITM/BSACIT Student Outcomes will be evaluated in ITMD 411:
BITM/BSACIT graduates should be able to:

(b) Design, implement, and evaluate a computer-based solution to meet a given set of computing requirements [ABET Computing 2]
(f) Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems [ABET IT 6]

The following BITM/BSACIT Student Outcomes will be evaluated in ITMO 440:
BITM/BSACIT graduates should be able to:

(c) Communicate effectively with a range of audiences about technical information [ABET Computing 3]
(f) Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems [ABET IT 6]

The following BITM/BSACIT Student Outcomes will be evaluated in ITMS448 and ITMS 478:
BITM/BSACIT graduates should be able to:

(c) Communicate effectively with a range of audiences about technical information [ABET Computing 3]

BSACIT graduates should be able to:

(h) Apply security principles and practices to the environmental, hardware, software, and human components of a system. [ABET Cybersecurity 6]

In addition to the above, course objectives for each course will be assessed.

Student Artifact Assessment: The Department will use Blackboard Outcomes for assessment of undergraduate assignments beginning in the Fall 2018 term. Blackboard Outcomes Assessment will allow us to collect student artifacts from courses in Blackboard Learn, apply a rubric to the student work and generate both detailed and summary reports of the results. This will require that the following steps be taken in each course to be assessed:

1. Identify the course in which we will collect student artifacts. (Done.)
    a. We will send the necessary information so the IIT Office of Student Learning Assessment can enter the learning goals into Blackboard.
2. Identify the assignment in each course that will provide the student artifacts.
    a. Faculty members need to select an assignment that *best* allows evaluation of the outcomes being assessed. This selection needs to be made at the time of drafting of the course syllabus.
3. Create the assignment in Blackboard Learn.
4. Align the assignment to the appropriate learning goal (student outcomes).
    a. This has always been there when we create assignments but we have never been able use it. We will provide all of our student outcomes so that faculty members may elect to make use of this even for courses not being assessed.

Graduate Assessment, Fall 2018:

Based on *Information Technology and Management Assessment Plan for Graduate Degrees, 2016-2018 (Revision 2)* http://itm.iit.edu/faculty/2016-2018ITMGraduateProgramAssessmentPlan(Rev.2).pdf
Master of Information Technology and Management (MITM) Program Educational Objectives Assessed: 3
Master of Cyber Forensics and Security (MCYF) Program Educational Objectives Assessed: 1
Master of Science in Applied Cybersecurity and Digital Forensics (MSASDF) Program Educational Objectives Assessed: 1
Student Artifacts: Survey / December 2018 / Evaluation by ITM Curriculum Committee
Assignments / December 2018 / Evaluators Trygstad/Arora/Dawson
Courses assessed:

Curricular Area	***Course***	
System Technologies (MITM)	ITMO 556	Introduction Open Source Software
Security Management (MCYF/ MSACDF)	ITMS 578	Cyber Security Management

The following program education objective will be evaluated in ITMO 556:
At the conclusion of their studies, graduates of the Master of Information Technology and Management should be able to:

2. Manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting.

The following program education objective will be evaluated in ITMS 578:
At the conclusion of their studies, graduates of the Master of Cyber Forensics and Security and the Master of Science in Applied Cybersecurity and Digital Forensics degrees should be able to:

1. Design and implement a comprehensive enterprise security program using both policy and technology to implement technical, operational, and managerial controls.

In addition to the above, course objectives for each course will be assessed.

Survey drafting and data collection staff:

Amber Chatellier, ITM Department Manager
Angela Jarka, SAT Assistant Director of Marketing and Administrative Services

Assessment Evaluators:

ITM Curriculum Committee

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	Maurice Dawson, Director, Center for Cyber Security and Forensics Education and Assistant Professor
	Louis F. McHugh IV, SAT Director of Information Technology and Adjunct Industry Professor
	Thomas "T.J." Johnson, Adjunct Industry Professor
	Dan Kahn, Adjunct Industry Professor
Faculty:	C. Robert Carlson, ITM Chair and Professor
	Karl Stolley, Associate Professor (joint appointment)
	Yong Zheng, Assistant Professor
	Adarsh Arora, Coleman Entrepreneur-in-Residence and Industry Professor
	William Lidinsky, Industry Professor
	James Pappademas, Industry Professor

All faculty members may be appointed as assessment evaluators for Assignment Artifacts.