IT 2025 ABET Self-Study Report

Ryan Tolboom

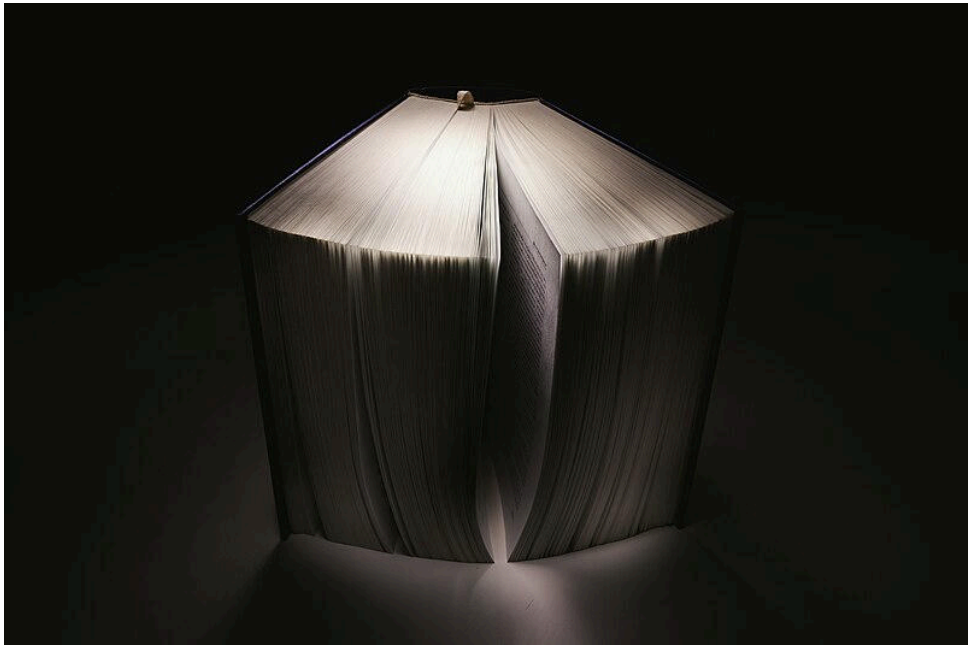
New Jersey Institute of Technology

What is a *Self-Study Report*?

- "quantitative and qualitative assessment of your program's strengths and limitations"
- Ends up being about a 200 page document submitted in July
- Used by the site team in the September visit

What goes in the report?

- Eight criteria:
  - Students
  - Program Educational Objectives
  - Student Outcomes
  - Continuous Improvement
  - Curriculum
  - Faculty
  - Facilities
  - Institutional Support
- Four appendices
  - Course Syllabi
  - Faculty Vitae
  - Equipment
  - Institutional Summary



What do I need from you?

Woman Typing Computer Keyboard is in the public domain under CC0

- CVs in ABET format
- Course Syllabi in ABET format
- Two Faculty Course Assessment Reports (FCARs) for each core course
- Best/worst/average examples of student work from one section of each course
- Course textbooks

ABET CV

- Content Areas:
  - Name
  - Education - degree, discipline, institution, year
  - Academic and Professional Experience - institution or entity, rank (if relevant), title, when (e.g., 2002-2007, full-time or part-time
  - Professional credentials, certifications, or licensing
  - Professional development activities
  - Contributions to the discipline (e.g., service, publications or presentations)
- Digital, readable, uniform, max three pages
- Here's a template

Name: Ryan Tolboom

Education:
- Master of Science, Computer Science, New Jersey Institute of Technology, 2019
- Bachelor of Science, Computer Science, New Jersey Institute of Technology, 2004

Academic and Professional Experience:
- New Jersey Institute of Technology, Associate Department Chair for IT, 2023-current, full-time
- New Jersey Institute of Technology, Master of Science in Information Technology, Administration, and Security, 2020-current, full-time
- New Jersey Institute of Technology, University Lecturer, 2019-current, full-time
- New Jersey Institute of Technology, Adjunct Professor, 2017-2019, part-time
- Monroe Township Schools, Educational Technology Facilitator, 2015-2019, full-time
- Monroe Township Schools, Interim Science Department Coordinator, 2015, full-time
- Monroe Township Schools, STEM High School Teacher, 2006-2015, full-time
- Applied Materials, Research Assistant, 2004-2005, part-time
- Integrated Photonic Systems / Petalogic, Research Assistant, 2003-2004, part-time

Professional credentials, certifications, or licensing: None

Professional development activities:
- NJIT Institute for Teaching Excellence Hyflex Strategies

Contributions to the discipline:
- Textbook: Systems Integration: A Project Based Approach
- Textbook: Computer Systems Security: Planning for Success
- Presentation: Open Textbook Collaborative Conference: Deep Dives/Faculty Authors Present, Middlesex College, Edison NJ, September 27, 2024
- Presentation: OEGlobal 2023: Open Source Tools for Education Resources, Norquest College, Edmonton Alberta, October 16, 2023
- Presentation: Open Educational Resources Conference: Open Source Tools for Open Education Resources, Kean University, Union NJ, April 14, 2023
- Open source contributions: Gentoo Linux, Arch Linux, GUIX, cjdns, omniauth, libasciidoc, qdmr, meshtastic, WSJT-X.

ABET Syllabus

Course number and name: IT 230 Computer Systems Security

Credits, contact hours: 3 credits, 3 contact hours/week

Name(s) of instructor(s) or course coordinator(s): Ryan Tolboom

Instructional Materials:

- Canvas Learning Management System
- Respondus Proctoring System
- Class GitHub Page
- Textbook: Computer Systems Security: Planning for Success
- Docker Desktop
- A computing device that meets the YWCC minimum specifications

Specific course information

Brief description of the content of the course:

IT 230 introduces the applied topic of Computer Security. Students will learn ways of preventing, identifying, understanding, and recovering from attacks against computer systems. It also presents the evolution of computer security, the main threats, attacks and mechanisms, applied computer operation and security protocols, main data transmission and storage protection methods, cryptography, network systems availability, recovery and business continuation procedures.

Prerequisites or corequisites: IT 120

Educational objectives for the course:

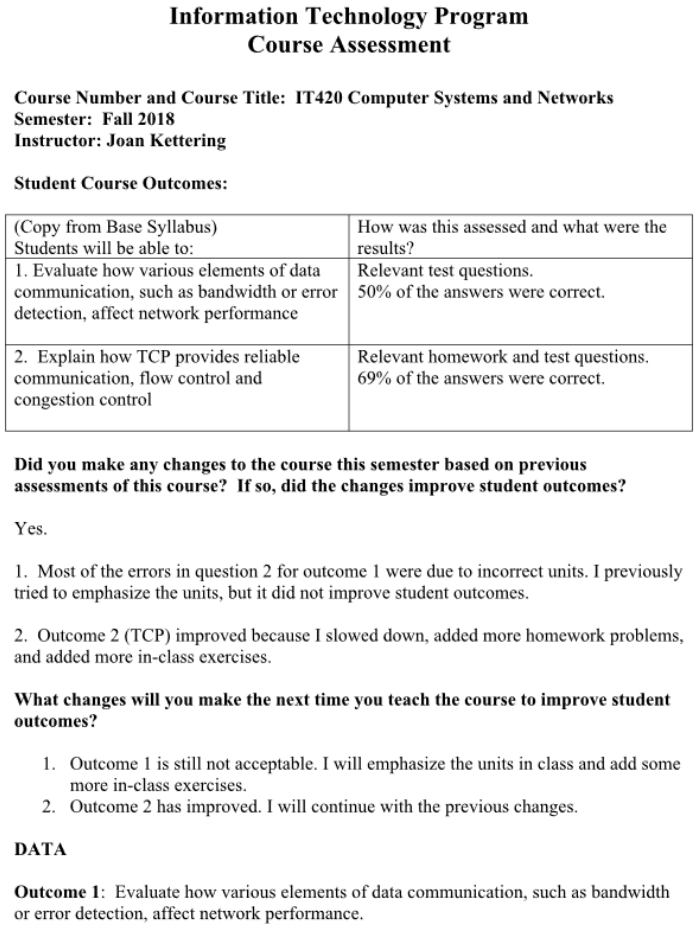
The goals of this course align with the objectives of the CompTIA Security+ SY0-601 exam. They are reproduced here for reference:

- 1.1 Compare and contrast different types of social engineering techniques.
- 1.2 Given a scenario, analyze potential indicators to determine the type of attack.
- 1.3 Given a scenario, analyze potential indicators associated with application attacks.
- 1.4 Given a scenario, analyze potential indicators associated with network attacks.
- 1.5 Explain different threat actors, vectors, and intelligence sources.
- 1.6 Explain the security concerns associated with various types of vulnerabilities.
- 1.7 Summarize the techniques used in security assessments.
- 1.8 Explain the techniques used in penetration testing.
- 2.1 Explain the importance of security concepts in an enterprise environment.
- 2.2 Summarize virtualization and cloud computing concepts.
- 2.3 Summarize secure application development, deployment, and automation concepts.
- 2.4 Summarize authentication and authorization design concepts.
- 2.5 Given a scenario, implement cybersecurity resilience.
- 2.6 Explain the security implications of embedded and specialized systems.
- 2.7 Explain the importance of physical security controls.
- 2.8 Summarize the basics of cryptographic concepts.
- 3.1 Given a scenario, implement secure protocols.

- Content Areas:
  - Course number and name
  - Credits, contact hours
  - Name(s) of instructors or course coordinators(s)
  - Instructional Materials
  - Specific course information
  - Educational objectives for the course
  - Brief list of topics to be covered
- Digital, readable, uniform
- Here's a template

ABET FCAR

- Internally developed
- Student outcomes, method of assessment, a few questions, and the data
- Two for each course: one from two years ago and one from this year.
- Used as data for Criterion 4: Continuous Improvement
- Here's a template
- Mike also gave a whole presentation on the topic



Information Technology Program
Course Assessment

Course Number and Course Title: IT420 Computer Systems and Networks
Semester: Fall 2018
Instructor: Joan Kettering

Student Course Outcomes:

(Copy from Base Syllabus) Students will be able to:	How was this assessed and what were the results?
1. Evaluate how various elements of data communication, such as bandwidth or error detection, affect network performance	Relevant test questions. 50% of the answers were correct.
2. Explain how TCP provides reliable communication, flow control and congestion control	Relevant homework and test questions. 69% of the answers were correct.

Did you make any changes to the course this semester based on previous assessments of this course? If so, did the changes improve student outcomes?

Yes.

1. Most of the errors in question 2 for outcome 1 were due to incorrect units. I previously tried to emphasize the units, but it did not improve student outcomes.

2. Outcome 2 (TCP) improved because I slowed down, added more homework problems, and added more in-class exercises.

What changes will you make the next time you teach the course to improve student outcomes?

1. Outcome 1 is still not acceptable. I will emphasize the units in class and add some more in-class exercises.
2. Outcome 2 has improved. I will continue with the previous changes.

DATA

Outcome 1: Evaluate how various elements of data communication, such as bandwidth or error detection, affect network performance.

What should we do with our time remaining?

Work on your ABET CV

Work on an ABET Syllabus

Work on a FCAR for one of your courses

Gather examples of student work