# Program Assessment Report (PAR)

**Info Tech & Cybersecurity (ITC) Baccalaureate Degree**

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**ACADEMIC YEAR COVERED BY THIS REPORT: 2021-2022**

## I. PROGRAM LEARNING OUTCOMES

Goals and Objectives The goal of the program is to prepare students for post-graduation employment in information technology and cybersecurity related fields. This will be achieved through the attainment of the following student outcomes, as specified by the Computing Accreditation Commission of ABET. The program was launched in Fall 2018. (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. [IT] (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. [IT] (l) An ability to effectively integrate IT-based solutions into the user environment. [IT] (m) An understanding of best practices and standards and their application. [IT] (n) An ability to assist in the creation of an effective project plan. [IT] The program's coursework focuses on the fundamentals of networking, cybersecurity, programming, information management, web systems, system administration, system integration with advanced coursework to build on the fundamentals to provide depth. The program was launched in Fall 2018.

## II. PROCEDURES USED FOR ASSESSMENT

### A. Direct Assessment

Each learning outcome will be assessed in the senior capstone courses, Team Projects I and II. This is a cross-disciplinary course comprised of students from the following majors computer science, computer engineering, electrical engineering and most recently, information technology and cyber security. As the program began in 2018, it has not been formally assessed using the capstone courses. We will assess the program using the same assessment strategies and methods as above. The Team Projects (senior design) course requires a number of student deliverables targeted to reinforce and to serve as performance indicators for assessment of mastery of critical program learning objectives. Deliverables include white papers, briefings and charts, document reviews, group proposals, quizzes, group requirements/constraints/standards lists, group requirements specification documents, group design specification documents, group presentation and a cover letter and resume. The prerqusite quizzes used in all three of the exisiting progams will also be used to assess students to determine their retained relevant knowledge. Formative data is collected in online multiple-choice prerequisite quizzes to assess retained prerequisite knowledge required for courses in the mandatory program introductory core. This data is used both by the UGSC to monitor program quality as well as by individual instructors to help identify students that are struggling with the required knowledge/skills so that they can receive appropriate support or advice. The formative assessments focus on discipline-specific knowledge and skills that are expected to be retained as students progress along the prerequisite introductory core course sequence. The UGSC is selecting the courses and workig on preparing the quiz questions to implement next year.

### B. Scoring of Student Work

The direct assessment questions are delivered to students in the form of an on-line "assessment of prerequisite knowledge" in each of their core program courses. At a minimum, the program expects each outcome to be measured in at least two places over the course of every three-year period. In practice, however, the ease of delivery of the on-line assessment allows us to target the significantly higher goal of directly assessing every student, every term, in every core course. Questions are taken from professionally-developed assessment instruments, such as the GRE subject test in computer science, and scored according to the provided answer keys associated with these instruments.

### C. Indirect Assessment

Exit surveys are used to collect graduating student assessment of self-efficacy for each of the learning outcomes. For each outcome students are asked to rate their own level of ability/achievement. For FA19 and SP20, student responses generally indicated a high self-assessment of abilities related to program outcomes. These self-efficacy ratings did not exhibit any concerning trends relative to previous years. See attached documents, ExitSurveyF19.pdf and ExitSurveyS20.pdf, for full details including descriptive statistics and distribution plots.

## III.  ASSESSMENT RESULTS/INFORMATION:

Assessment tools are being designed for this new program and will include the senior capstone courses, i.e. team projects and prerequisite quizzes for selected sequence courses.

[Summary]

No findings to report.

## IV. ACTIONS TO IMPROVE STUDENT LEARNING

This data is used both by the UGSC to monitor program quality as well as by individual instructors to help identify students that are struggling with the required knowledge/skills so that they can receive appropriate support or advice. The UGSC faculty and student advisors review all program courses every three years to ensure that course pre-requisites are relevant, student learning objectives are accurate and sequential courses are aligned. Technical electives are reviewed and new courses created as needed to ensure coverage of emerging technologies. Student grades are analyzed to flag courses where students are having difficulties so course coordinators can identify any problems and adjust the course content or learning strategies. A student advisory board that consists of a cross-section of students from all CSE majors and levels meet with the undergraduate program director at least once a year. Plans are shard and students give input on what is working and suggestions for improvements. Similarly, an external advisory board comprised of business leaders and alumni meet with the department chair and program faculty to give program suggestions and feedback. CSE was the first department to build active learning classrooms. We have found that students, especially in introductory level courses, embrace this learning style. This is reflected in the course comments as well as student advisory board meetings. We continue to convert classrooms to support the active learning pedagogy. Most recently with the transition to remote learning, many faculty use the breakout rooms to continue to incorporate active learning in distance mode. New faculty members and adjuncts are assigned to faculty mentors. The department system administration team periodically meets with the UGSC and department chair to discuss the state of the labs to offer courses in modern, up-to-date laboratories that meet the needs of the ever changing technological

requirements. Our systems team stood up a Discord server to foster communication between students, faculty and advisors during the quarantine. We have received high praise as students use the site for study groups, help room assistance and to connect with their peers.

## V. SUPPORTING DOCUMENTS

Additional documentation, when provided, is stored in the internal Academic Program Assessment of Student Learning SharePoint site.