Program Review Executive Summary

Information Technology: Game and Simulation Programming

Major Reviewed:

- *Game and Simulation Programming (BSP), B.S.*

July 2021

Pennsylvania College of Technology
A Penn State Affiliate

The Game and Simulation Programming (BSP) major was established in 2011 to provide students with strong programming skills to accommodate the growing needs of the gaming industry and the broader discipline of computer simulations. The program's focus of developing interactive and engaging digital experiences also enables students to pursue careers not only in the gaming/simulation domain, but also in other programming-related fields. The program is unique in its player-centered and programming-based focus, its Information Technology (IT) core, and its cross-disciplinary approach that requires students to employ knowledge from domains outside of IT. By providing a commitment to hands-on, experiential learning within an integrative and responsive educational program, this program continues to support the College's mission.

Courses within the program are assessed regularly. The program assessment results show that students met or exceeded the levels dictated for success. Implemented recommendations from the 2015-2016 Program Review included renaming the program from Gaming and Simulation (BGS) to Game and Simulation Programming in order to better reflect its programming foundation, revising the course sequencing, improvements to the outcome process, and development of a seminar course to aid student transition to industry. The program is mainly supported by three faculty who also support other programs at the college. Each faculty member brings unique experiences and perspectives that serve students in this program well. Faculty are very active in outreach and recruiting events such as judging various high school competitions, summer camps, career days, open house, and tour/visit days. The program is also supported by strong and active clubs facilitated by IT faculty that provide for a strong student-centered community.

Game and simulation careers fall into the "software developers" category, as defined by the U.S. Bureau of Labor Statistics, where there is an expected 22% increase in these jobs over the next eight years. The program has graduated 12-16 students each year from 2016 - 2020. The most recent employer survey shows that 100% of employers who hired graduates from the BSP program would again hire PCT graduates. Initial data from graduates revealed an 85.7% overall job placement from 2016-2019 and this data also suggested that graduates from this program tend to favor more stable and reliable simulation/application development careers over careers in the gaming industry. Overall findings show that students are prepared and successfully obtaining jobs/internships within the gaming and simulation companies, such as Discovery Machine, Disney, Amazon Robotics, and SAP Learning.

Analysis of student data showed positive indicators of success and also areas in need of additional investigation. One positive factor is that there is a general decline in the developmental needs of incoming students. In addition, incoming high school student GPAs have been level and appear to show that students are entering the college prepared. While program FTEs gradually increased to 110 in 2018, this was followed by a decline to 63 in 2020. While FTE numbers have been somewhat strong, they are unfortunately accompanied by a decrease in retention rate.

In its 10 years, the BSP program has proven to be a strong program that fulfills a unique niche in the software development area. Recommendations to maintain program excellence include:
- Discuss and evaluate further inclusion of the Unreal Engine, virtual reality, and augmented reality within the major
- Investigate and increase student business culture and structure understanding
- Investigate and develop outcomes for learning theories to support serious games
- Identify and continue to support student professional development experiences

- Coordinate with the library to make use of existing VR systems for development purposes
- Evaluate the offering of courses remotely in order to support non-traditional enrollment
- Explore development of problem-solving and logic curriculum to address student difficulties in this area
- Investigate the decline of graduation and retention rates
- Develop additional relationships with the gaming industry
- Explore development of remote components in upper-level course curriculum in order support changes in industry working environments
- Explore possible hardware and software improvements in gaming and simulation lab in order to better support the needs of upper-level students
- Investigate an art design-focused component of the degree
- Work with other areas on campus to better support the incoming student population
- Determine ways to showcase student work internally and externally