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CIT Abstract Submission - 2015

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Application Form

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Abstract Information

Title*

Developing a Semi-standardized and Accessible Introduction to Computer Science Course for the SUNY System: The Final Report for the SUNY IITG Project

IITG Presentation

If this is an IITG presentation, please indicate below.

IITG

Format:*

Please review format descriptions prior to selecting your format.

Presentation (30 minutes in length)

Please reviewtrack descriptions prior to selecting your 1st and 2nd track preferences.

Track - 1st Preference*

Access, Completion, and Success

Track - 2nd Preference*

21st Century Learning Environments

Rating:*

Please indicate the rating for this presentation.

Introductory

Brief Abstract of Presentation*

Please provide a brief abstract of this session to be included in the Conference Program book.

We explore a novel, practical, balanced, semi-standardized and accessible introduction to CS course. The results of the project are expected to improve the quality of the undergraduate CS education experience and possibly facilitate seamless transfer across the SUNY system. We will share the current status of a Computer Science (CS) educational research project with the SUNY education community, discuss the instructional technology role in the course and present the results obtained to date.

Full Description of Presentation*

One critical challenge in CS education at Higher Education Institutions (HEIs), including the SUNY system, is the lack of commonly agreed CS gatekeeper curriculum standard. For the purposes of this project, CS broadly refers to a cluster of existing and emerging fields that are related to computers including, but not limited to, computer science, computing, computer systems, and information systems. Introductory CS courses vary widely from campus to campus within SUNY, as well as outside the SUNY system. This variation has created extra obstacles to the already challenging pathway to CS degrees for the many students without an adequate K-12 CS exposure. Lacking standardization in the gatekeeper courses has caused many issues including inconsistent learning outcomes for students taking diversely designed courses, a less than seamless transfer pathway, and an overall lack of guidance to new faculty members and new students in teaching and learning.

The PIs have conducted a CS educational research project to explore a novel, practical, balanced, semi-standardized and accessible introduction to CS course (an important gatekeeper course of CS or related computing curriculum). The results of the project are expected to improve the quality of the undergraduate CS education experience and possibly facilitate seamless transfer across the SUNY system. The curriculum of this project has been designed to engage college students to learn the principles of computational thinking and to improve their problem solving skills which will be beneficial to them in the many computing fields they could pursue. This initial exposure at the undergraduate level will provide students with the fundamentals they need to improve their computational competencies, challenge students' preconceptions of CS and STEM in general (as some computing concepts are universal to STEM-related disciplines), and lead to better preparation for undergraduate students to successfully pursue advanced courses toward a computing degree. This improved preparation will allow for a smoother transition in CS both for students from the secondary to post-secondary level and for transfers from two-year to four-year colleges.

Our presentation will report the final results of the SUNY IITG project. Particularly, we will report the course design process, the student learning outcomes, the supporting topic list, sample teaching materials, sample syllabi, a sample question bank, and an initial attempt to design a common course cartridge for the proposed course. A literature review, current SUNY introductory course survey, SUNY faculty survey and SUNY student interview results will be presented. Additionally, our presentation will discuss the characteristics and advantages of the proposed course, various potential instructional technology delivery formats, issues and challenges of implementing the project, and possible future work. The project team will use the feedback from the offerings of the proposed course to refine the proposed course portfolio and assess the impact of the proposed project on the participating students and the programs. The participating faculty PIs of the project are experts in CS instruction, and have abundant teaching/research experience in developing CS curriculum. Assisting staff include librarians and education faculty member from SUNY Oneonta.

Co-Author/Co-Presenter Information

Please enter information for your co-authors/co-presenters below. If you do not have any co-authors/co-presenters, skip to the Abstract Information section.

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