Developing Learning Modules to Support Personalized Pathways for Students with Diverse Academic Backgrounds

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Project Scope

The goal is to modularize the Human Computer Interaction (HCI) course at UBCO that shares common modules with several other courses. Module design and delivery should accommodate diverse student backgrounds and support design thinking activities.

Course Context

COSC 341 is a third year core course in the Computer Science program at UBCO. Traditionally, it has a prerequisite of third year standing, but now, it also has an introductory programming course as a prerequisite. In addition, since COSC 341 is the only HCI course in the department, it is often cross-listed as COSC 541.

Students come from other programs, have different academic goals, and are not used to thinking about design concepts in computing.

Module Design

Every module has a pre-test and a post-test. The pre-test helps students identify learning objectives. Lost marks on the pre-test can be made up by doing a tutorial activity, but it is otherwise optional. Tutorial activities are designed to help students achieve basic competencies in the module. Every module has a required main activity which is a team exercise designed to help students apply and master module concepts.

Synchronous Aspects

The recommended schedule was M/W/F.
- Mondays: Asynchronous lectures
- Wednesdays: In-class tutorial activities
- Fridays: In-class main activities

Lessons were provided in advance and students were able to read them at their own pace. Pre-tests were due before the tutorials, and readings were due by main activities.

Learning Modules

More optional modules still need to be developed. Currently, the following are offered as core modules:

- What is HCI
- Course Logistics
- User Centered Design
- Design Rationale
- Usability Principles, Guidelines, Heuristics
- Prototyping
- Formal Models
- Alternative Interfaces
- Evaluation Methodology
- Heuristic Evaluation
- Accessibility
- Course Summary

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Research Publications


Canvas Integrated Team Formation and Analytics Tool

To support team activities, we built a team formation and analytics tool that is fully integrated with the Canvas LMS. The main features include:
- Creating surveys to elicit student information
- Customizing instructor preferences for teams
- Forming teams based on student attributes
- Forming teams based on project needs
- Reviewing teams on the analytics dashboard
- Changing team membership manually
- Monitoring team performance through visual analytics
- Gathering peer evaluation student feedback
- Reconfiguring teams based on student peer evaluations

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http://whatweteach.herokuapp.com/