Continuous Improvement

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Improvement Initiatives

- Refinement of ABET process
- Program Improvements
We already have a solid foundation in place!

- ABET has made changes, for example, number of Student Outcomes has been reduced to 6 from 11.

- Feedback received from previous assessments and internal practices.

- ROI consideration.
Improve the process

• Transparent! Routine ! Value driven!
• Improve the change management to ensure the completeness and consistence.
• Developing a comprehensive Handbook based on current process, guidelines, metrics, and etc.
• Automation! Automation! Automation! Automation!

More specific refinement will be discussed later.
ABET Process Refinement

• Consolidation of PIs based on changes in SOs and CS curriculum topics

• Refinement of ABET Handbook

• Automation of data submission and analysis

• ABET workshop each semester (focusing on adjunct faculty)

• One Stop ABET Site:
  • https://tryu-fullerton-edu.github.io/assessment
Program Improvement Initiatives Examples

- **Standardization of lower level CS courses (120, 121, and 131)**
  - High PIs numbers but low EPP passing rate
  - Has shown some improvement: Fall 2018 and Spring 2019’s EPP passing rates is higher.

- **Improvement of CS curriculum**
  - **New courses:** CPSC 375 (Introduction to data science and Big Data analytics), CPSC 411 (Mobile device application programming), CPSC 458 (Malware analysis), CPSC 459 (Blockchain technologies), CPSC 474 (Parallel and distributed computing)
  - **Retired outdated courses:** CPSC 223H (visual basic programming), CPSC 476 (Java enterprise application development), CPSC 303 (Multimedia concepts), CPSC 322L (intro to computer-aided design), CPSC 376 (Client/server systems with Java), CPSC 459 (Micro-computer software systems), CPSC 477 (Introduction to grid computing), CPSC 491T (Variable topics in computer science)
  - **Courses with major changes:** CPSC 473 (Web programming and data management) changed to two courses CPSC 473 (Web front-end engineering) and CPSC 476 (web back-end engineering), CPSC 483 (Data mining and pattern recognition) changed to (Introduction to machine learning)
Program Improvement Initiatives Examples

- **Course Ownership Initiative**
  - Specialty groups for CS courses are created to manage course change and ensure consistence.

- **Cloud Computing Environment and etc.**

- **Individual Course Improvement**
  - Improvement culture is nurtured, textbook changes, hiring qualified instructors, adopting tools/package, refinement in projects/assignment, updating course materials, and etc.
Specialty Groups for Core Courses

- 120: Kevin, Michael, Doina, Christopher
- 121: Paul, Kevin, Mikhail, Christopher
- 131: Anand, Kevin, Mikhail, Christopher
- 223: Floyd, Mikhail, Christopher
- 240: Shawn, Mikhail
- 311: Doina
- 315: Doina, Christopher
- 323: James, Doina
- 332: Shawn, Christopher
- 335: Kevin, Bin
- 351: Mikhail, Wenlin, Yun
- 362: Jo, James, Bin
- 440: Ning, Mikhail
- 471: Yun, Mikhail
- 481: Wenlin, Paul, Anand, Mikhail, Christopher
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What we heard in last brainstorming session

**Some Improvement Examples:**

- **Improvement of CS curriculum (continue)**
  - CPSC 362 and CPSC 481 are designated as a capstone project course.
  - CPSC 254 (Open source systems) becomes an elective

- Future changes (approved in spring 2019): CPSC 353 (Intro. to security) will be a core course. CPSC 311 and 440 (Computer architecture) will be changed from cores to electives, new courses to be proposed in Fall 2019 are CPSC 496 (undergraduate seminar) and 497 (senior capstone project) covering capstone project experience and upper-division writing.

**Recent Textbook changes:** CPSC 120, 121, 131, 353, 349, 449.

- **Course Ownership Initiative:** Specialty groups for CS courses are created to manage course change and ensure consistence.

- **Cloud Computing Environment and etc.**

- **Individual Course Improvement**

There is an improvement culture, faculty has done a lot to improve his/her courses: textbook changes, adopting tools/package, refinement in projects/assignment, updating course materials, and etc.
Improvement Suggestions -1:

• hold tutoring sessions
• Build infrastructure for students to access Cloud (AWS or Azure)
• Involve students in internship and course independent projects.
• Use a common syllabus for all sections.
• Instructors teaching same class to collaborate to develop a consistent set of criteria (assignments).
• For 311. In addition to technical writing, emphasize verbal communications and presenting.
• Consider appointing at least one adjunct faculty to the Assessment Committee; Adjust the content of CPSC 311 to include topics in reading per revised UPS.
• Explain where data are stored; give examples on how to submit; the deadline to submit.
• Add active learning strategies to address larger class sessions
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Improvement Suggestions - 2:

• Suggestions to add more topics, 253 – discuss IP (open source); 311 and 315 – discuss IP; 481 – need to include ethics based on the new 2018 ACM Code of Ethics; 315: needs new unit on security, change or refine assignments; add online forum in Titanium to enhance communication; Add team evaluation as formal part of collaborative project; add pairs as option for kick-off to add small group activity: paper and presentation; 362: add security/ethics as part of large semester long project.

• Add Ethics PI to 311

• Allow adjunct faculty to provide inputs on course materials, textbooks, and etc.; It is hard to find the course objectives, make CS catalog more accessible.

• Embed more Cloud technology into the program, such as DevOps, Solution Architects, and Cloud Practitioner. For Cloud technology, provide AWS, Azure, and GCP.
What we heard in last brainstorming session

Improvement Suggestions -3:

• Use shared Google drive to create a consistent course syllabus and materials for all 120 and 121 instructors; Need a grader!
• Create a shared ABET google drive with all info.
• Institutionalize ABET process, course assignment includes the current course PIs.
• Ensure consistence in 120, 121, and 131.
• Standardization of 253 is needed, as Linux and Open Source are important topics.
• Instructors need to improve teaching.
• Need a course to cover Test Driven Development, refactoring, dealing with legacy codebase, etc.
• Integrate REST into database class.
Plan

• **Fall 2019**
  - Release ABET website
  - Analyze Fall 2018 – Spring 2019 data
  - Collect artifacts (resume, syllabus, and etc)
  - Complete the Handbook
  - Gap analysis and fixing
  - Collect data
  - Initial draft of the Self-Study Report (SSR)

• **Spring 2020**
  - Continue fixing gaps identified
  - Continue to track improvement effort
  - Collect artifacts needed
  - Complete the 1st comprehensive SSR

• **Summer 2020**
  - Finalize the baseline version of SSR

• **Fall 2020**
  - Prepare for onsite visit
  - Data analysis for Fall 2018 – Spring 2020
  - Onsite visit
Brainstorm Session

• Do you have any suggestions to improve ABET website?

• What improvement actions you have taken? What are the results? How do you sustain the improvement?

• Do you have any suggestions to improve the courses you are teaching? Or things we can do to improve our program to achieve program educational objectives?
THANK YOU FOR YOUR ATTENTION!