A Software Engineering Program: University of Waterloo Flavour
Implementing a Joint Software Engineering Program

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Introduction

- Background
- Stages of development
- Approval process
- Program Implementation
History - Joint SE Option

- SE specialization of CS and CE programs
- Joint development of Option curriculum and SE courses
- Shared delivery of courses and curriculum updates
- Started in Fall 1995

Good, but

- couldn’t cover all SE material in Option courses
- CS/SE graduates weren’t eligible to become P.Eng.
"Ideal" SE Program?

- developed by ad hoc committee of SE faculty from both departments

- with input from different recommendations, programs, and professional requirements
  ACM, IEEE, SEI, CEAB, CIPS, other SE programs

- proposed a new SE program in terms of non affiliated courses (SE courses)
Presentation to Departments

- presented in an open forum and at individual department meetings
- cautious approval in concept
- each department had some concerns about
  - insufficient courses from its domain
  - whether SE was a distinct discipline (CS)
  - whether SE was an engineering discipline (E&CE)
  - how it would work
- required more specific details in terms of implementation and curriculum
Implementation Working Group

- two chairs, two U/G associate chairs and two other representatives from each department
- two goals:
  - Refine the initial curriculum into a “working model”
  - Define an feasible operational structure for a truly joint program
Curriculum Refinement

- use existing courses where possible (CS, E&CE, Math and Science courses)
- clearly define course descriptions for SE labeled courses
- make sure the program could satisfy professional requirements (CEAB and CIPS)
Some Major Operational Questions

- Which faculty would the SE students belong to?
  - Both!

- What degree would they receive?
  - Bachelor of Software Engineering, BSE.

- Who would be responsible for running the SE program?
  - The Director of the Software Engineering Program, Jo Atlee, reporting to a Software Engineering Board.
Some Major Operational Questions

- Who would be responsible for curriculum development?
  - A SE curriculum committee with approvals required through both departments and faculties.

- What type of program model should be used?
  - An all Coop, cohort based program.
Approval Process

- The detailed proposal was taken to CS & E&CE departments. (fall, 1999)
  - Major discussions with some reservations, but it was approved in both departments.

- The calendar description was prepared based on the detailed proposal. (late fall, 1999)
  - Some refinements were required in the “other issues”, but received final approval by the two faculties, followed by senate approval early in 2000.
SE Program Implementation

- Promoting the program
  - advertizing the program externally
  - explaining the program internally
- Negotiating policy and procedures details
- Developing curricula and labs
- Nuturing an SE identity
More Major Operational Details

- Admissions process, criteria, deflections
- Rules for promoting students through the program
- Teaching resources
- Instructional support
  - lab technicians vs. course co-ordinators
- TA salaries, duties
- Budget
More Minor Operational Details

- Orientation
- Faculty-specific awards
  - scholarships
  - upper-year awards, graduation awards
    e.g. Dean’s (or Deans’) Honours List
- Representation in Federation of Students
- Lockers
- Graduation ceremony, colour
Nuturing an SE Identity

- Goal is for SE students to form their own identity
- SE Students should feel like they belong to both the Engineering Faculty and the Math Faculty
- To foster this, we are creating
  - an SE program office
  - SE-specific labs, reading room, meeting space
  - SE-specific courses, course sections
  - SE advising

all within “neutral territory”
Observations and Lessons Learned

- Inter-Faculty programs are many times more difficult and time-consuming to mount.
- Requires all levels of administration throughout the university to buy into the concept.
- Requires trust between CS and E&CE.
- Requires flexibility and willingness to question decisions made for current students and to make unique decisions/solutions for SE students.
Observations and Lessons Learned

- Process has been educational for both Faculties
- Resulting program is significantly better than what might have been produced independently by either department