Computer Science Department Industry Advisory Board

November 22nd, 2019

https://csns.calstatela.edu/wiki/content/department/cs/assessment/iab/

Agenda

9.30AM – 10.30AM : Welcome and Program Overview

- Undergraduate Curriculum

- Graduate Curriculum

- Feedback on our Programs - Program Survey

10.30AM – 11.30AM : IAB Input for Department Goals

- Department Strategic Plans

- Discussion on Future Collaboration Opportunities

Adjourn

BS CS and MS CS

BS CS

- ABET accreditation (6 year cycle) until 2024
- 2006-2012, 2012-2018, 2018-2024

MS CS

- Program review (5 year cycle)
- Review in 2019-2020

ABET

- Program Educational Objectives
  - are long term goal statements that will describe what graduates are expected to attain within 3-5 years of graduation.
    - o Gainfully employed
    - o Attained advanced studies
    - o Adapted to lifelong learning
- Student Outcomes
  - are specific skills that the students will possess at the end of the degree program.
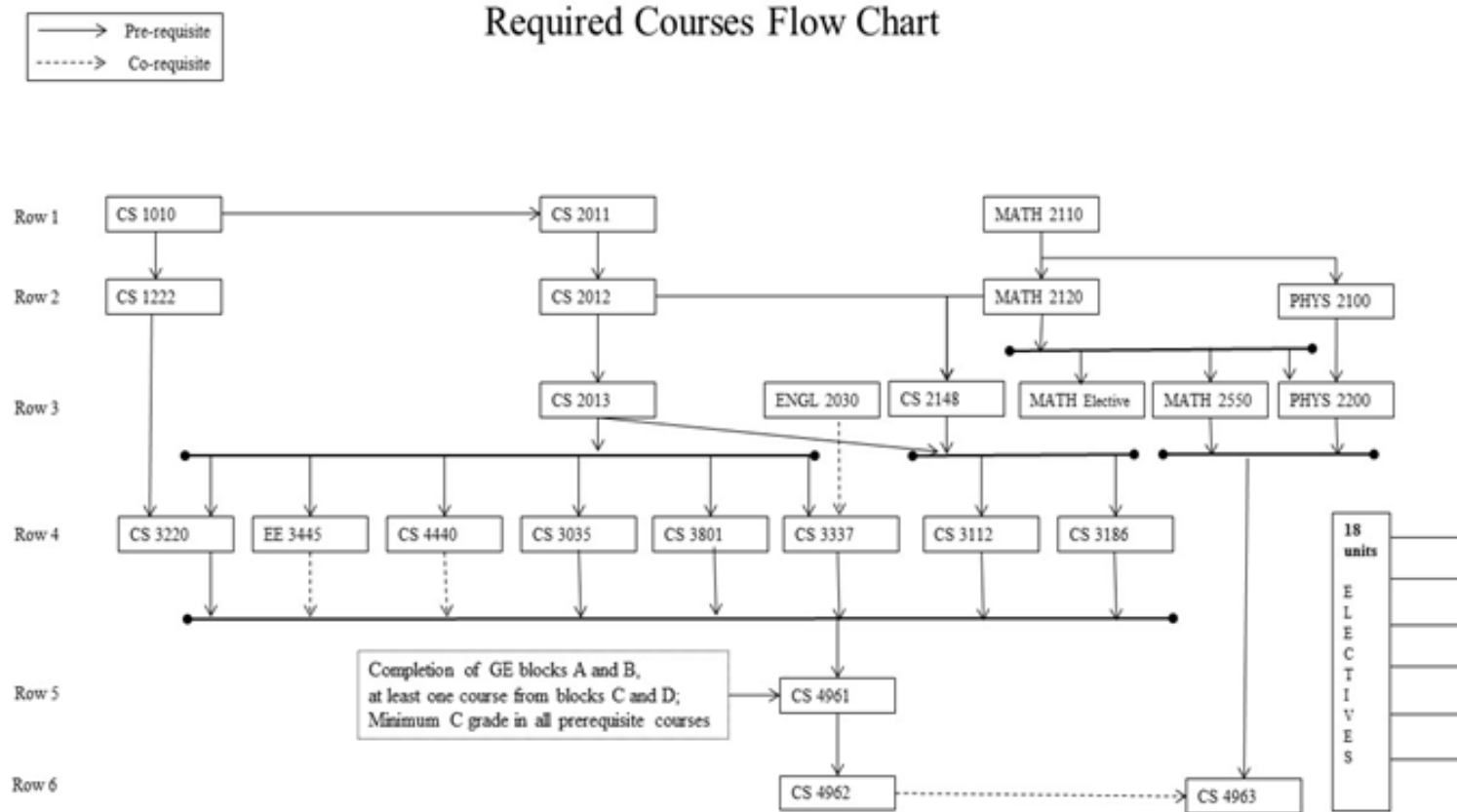
BS Curriculum

- General Education

- CS Core

- CS Electives

- 120 units
  - 39+9+72 = 120 units (Univ.)
  - 24+0+96 = 120 units (CS)

BS Curriculum (current)

Required Courses Flow Chart

Legend:
- → Pre-requisite
- ----→ Co-requisite

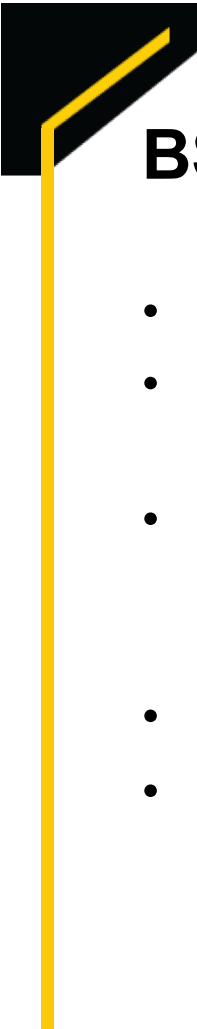|			
Row 1	CS 1010 → CS 2011	MATH 2110	
Row 2	CS 1222, CS 2012	MATH 2120	PHYS 2100
Row 3	CS 2013, ENGL 2030, CS 2148	MATH Elective, MATH 2550	PHYS 2200
Row 4	CS 3220, EE 3445, CS 4440, CS 3035, CS 3801, CS 3337, CS 3112, CS 3186		18 units ELECTIVES
Row 5	Completion of GE blocks A and B, at least one course from blocks C and D; Minimum C grade in all prerequisite courses → CS 4961		
Row 6	CS 4962 ----→ CS 4963		

BS Curriculum : CS4961-CS4962 Senior Design

Projects sponsored by

- Businesses: large and small, local and global
- Government: city, county, state, federal (e.g., Govt. printing office, DoD)
- The university: other departments, colleges, etc.
- Public-service organizations: *Engagement, Service, and the Public good* (e.g., hospitals, libraries)

Year long group projects: typically five students and one or two faculty advisors

https://csns.calstatela.edu/department/cs/projects

BS Curriculum : CS4961-CS4962 Senior Design

- Generate and strengthen connections between sponsors and faculty
- Get to know potential employees over an extended period—like a hassle-free year-long internship
- Enhance students' appreciation of life-long learning by challenging them to become productive using unfamiliar technologies and areas of specialization
- Improve students' resumes and job prospects
- Provide funding for student projects and the Expo

Student Outcomes (new)

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

3. Communicate effectively in a variety of professional contexts.

4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

CS BS Modification

Dropped	To be added
EE3445 (3 units)	CS2445 (3 units) as required
Physics II (5 units)	CS2470 (3 units) as required course, network and cybersecurity
	CS2140-Math elements for CS (2 units) prerequisite to 2148 discrete math
Math elective (3 units)	CS4661 (Intro to as required course, data science)

MS Curriculum (Current)

(I) Breadth Requirement (9 units) Select one course each from three of the following five areas of study.

- Algorithms
- Network Systems
- Web Systems
- Advanced Programming
- Software Engineering

(II) Chose Electives (18 units)

- CS4000/CS5000 level courses
- Wide range of areas
- Suits individual student career interests

MS Curriculum (New)

- **Required Core (18 units)**
  - Two courses from each of the three areas
- **Thesis Option (12 units)**
  - 3 additional electives (CS4000/CS5000) – 9 units Internal/External
  - CS5990 - 3 units over 2 semesters.
- **Comp. Exam Option (12 units)**
  - Take 4 additional electives (CS4000/CS5000)
  - Ensure that CS5035 or CS5337 is completed in either the core or elective classes.
  - Take CS5960 (0 units)

MS Curriculum (New)

Area	Existing Courses
Software design and implementation. (These courses are in the core tradition of CS, i.e., writing software.)	Programming paradigms-CS5035, Algorithms-CS5112, Web-based systems-CS5220, Software Engineering-CS5337,
System infrastructure. (These courses are in subjects that enable computer systems to operate and that support their operation.)	Network Protocols-CS5470 or Networks Management-CS5781 Security-CS5780 Operating Systems-CS 5440
Computing in the world. (These courses reflect the revolution in CS over the past decade. We now interact much more strongly and frequently with the physical and human world.)	AI--CS5660 Data Science –CS5661 Computer Graphics – CS5550 or Visualization –CS551

CS MS Program

Student Outcomes

1. ability to write and analyze sophisticated algorithms.
2. ability to design, develop, and analyze software systems.
3. acquired advanced knowledge and skills
4. communicate effectively both orally and in writing.

Assessment Process

- Assessment in various CS5000 level courses
- Data is represented on a 5 point scale that signifies various levels of attainment. (1. Unsatisfactory 2. Poor 3. Satisfactory 4. Good 5. Excellent.)

CS MS Program Assessment

- Faculty like the thesis students more (presumably that they spend at least two semester when they do a thesis). Excellent (75%) and Good (25%).

- In other CS5000 level courses, the averages seem to be similar: Excellent(30%), Good(15%), Satisfactory (40%), Poor (<10%).

- Class averages are typically around 3.5/5.

- Students, Alumni, Faculty, and IAB surveys have all been satisfactory (>3/5)

CS5000s   CS5990

CS MS Program – Alumni survey

1. How long did it take to get their first job offer after graduation with CS MS?
    The responses are indicated below:

    - Immediately after graduation - 45%

    - Less than 6 months – 35%

    - Between 6 and 12 months – 11%

    - More than 12 months- 6%

2. Did you receive any advanced degrees/awards after graduation with CS MS?

    - Around 9% of the respondents indicated the following they received additional certifications.

    - Around 7% of the respondents indicated they received internal awards/promotions

Faculty Highlights

- All Faculty are involved in curriculum development.
- A few faculty have received external grants
  - Dr. Kang, Dr. Ye, Dr. Amini, Dr. Pourhomayoun, Dr. J.Guo
- Many faculty have received internal creative leave awards to pursue a professional activity.
  - Dr. Abbott, Dr. H.Guo, Dr. J.Guo, Dr. Kang, Dr. Pourhomayoun, Dr. Sun, Dr. Ye, and Dr. Zhu
- Three of our faculty (In the last five years) have been recognized for mentorship of graduate students in the areas of Research, Scholarship and Creative Activity.
  - Dr. Kang, Dr. Sun and Dr. Pourhomayoun
  - This is awarded one per college and so is a significant award
- Many faculty are involved in student capstone projects both at the undergraduate (senior design team projects)
  - 26 projects this year with many faculty supervising two projects
- Many faculty are supervising graduate (individual) thesis.
  - 52 thesis completions in the last five years.

IAB FEEDBACK

- Surveys - IAB
    - https://csns.calstatela.edu/department/cs/survey/current

IAB

- Curricular feedback/guidance
- Industry sponsorships
  - Undergraduate & Graduate projects
    - EXPO 2020 (May 8th) - Undergraduate
  - Student internships
- Industry experts as part-time faculty
- Outreach
  - Talk to Freshmen
  - Talk to Seniors

Department Strategic Planning

- To define Overarching Department Goals that are aligned with the college vision, mission, and goals.

- The meeting was held on 11/8 for 3 hours.

- Narrowed down several goals in three focused areas.

Our ECST Focus Areas

STUDENT SUCCESS

Our paramount commitment is to help our students discover their strengths, develop their aspirations, and reach their full potential every day through engaging and supportive learning environments.

FACULTY AND STAFF EXCELLENCE

A faculty and staff engaged in innovative research, equipped with modern facilities and labs, will result in research and project opportunities for our students, and professional growth and satisfaction.

COMMUNITY ENGAGEMENT

Establishing ties and partnerships with industry, community, alumni, and peer institutions benefits our College, our local economy, and helps us prepare our students for career success and lifelong learning.

Department Goals - Community Engagement

Goal
Engage with local companies and increase sponsorships (most votes)
Increase internship opportunities
Grow industry advisory board
Increase alumni engagement

IAB FEEDBACK

- Discussions

THANK YOU