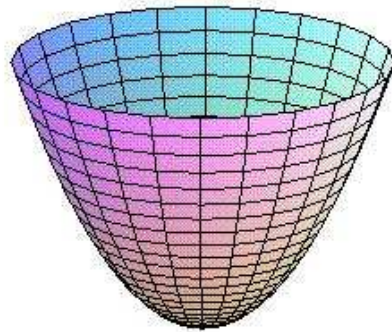


SANTA CLARA UNIVERSITY

The Department of Mathematics and
Computer Science

<http://www.scu.edu/cas/math> (or math.scu.edu)

Preview Days — April 2009



DENNIS C. SMOLARSKI, S.J., SCU 1969

INTRODUCTIONS

MATHEMATICS — COMPUTER SCIENCE

⇒ fields to prepare for great jobs!

“Best Jobs in America Today” (2009) (*Wall Street Journal*, Jan 26, 2009)

http://www.careercast.com/jobs/content/JobsRated_10BestJobs

MATH-RELATED JOBS

1. Mathematician, 2. Actuary, 3. Statistician

COMPUTER-RELATED JOBS

5. Software Engineer, 6. Computer Systems Analyst, 18. Computer Programmer

BASIC HANDOUTS

- Departmental Brochure
- “Why should you major in Math/CS?”
- CS Major – Checkoff sheet (Green Sheet)
- Math Major – Checkoff sheet (Blue Sheet)
- Overview of 2009 Core Curriculum.

OTHER HANDOUTS

For math majors:

- Careers in Math (MAA)
- Careers in Mathematics (Sloan)
- (Careers in Applied Mathematics) *optional*

For CS majors:

- Association for Computing Machinery (ACM) brochure about computing (also in Spanish)
- Careers in Computing (Sloan)
- 10 reasons to major in Computing (ACM)
- Frequently Asked Questions (ACM)

OVERVIEW OF CURRICULUM

⇒ Two levels of Requirements:

- University & College (core): Critical Thinking and Writing 1 & 2; Ethics; 3 Religious Studies; 2nd Level Language; Diversity; Civic Engagement; Culture and Ideas I–III; Science; Social Science; Arts PLUS Experiential Learning and Pathway.

⇒ *New Core for Fall 2009* (Handout)

- Major requirements

Departments try to organize these into a coherent and orderly progression (e.g., it is helpful to take Calc I before Calc II!)

See on-line samples: <http://math.scu.edu/samplecurrma2009.shtml>

OVERVIEW OF MAJORS

Mathematics: Calc I-IV, Discrete Math., Abstract Alg., Diff. Eq., Linear Alg, 7 upper division courses.

Computer Science: Calc I-IV, Discrete Math., Abstract Alg., Linear Alg, Intro CS, Object-Oriented Programming, Data Structures, Logic Design, Systems Programming, 7 upper division courses (with 2-3 from Comp. Engineering Dept), 2 support math courses.

ADDITIONAL (OPTIONAL) EMPHASES FOR EACH MAJOR

Mathematics:

1. Applied Math,
2. Financial Math,
3. Mathematics Education,
4. Recommendations for Actuarial Mathematics are available.

Computer Science: Cryptography and Security.

ADVANCED PLACEMENT IS ACCEPTED

Calculus AB — score of 4 or 5 receives credit for first two calculus courses

Calculus BC — score of 4 or 5 receives credit for first three calculus courses (score of 3 receives credit for first calculus course)

CAREERS

Mathematics: academic, industry, government, actuarial (insurance) work, cryptanalysis

Computer Science: Industry, government, academia (note that Canada is worried that there are not enough people studying CS to replace those expected to retire!)

<http://cacm.acm.org/magazines/2008/10/>

513-crossroads-for-canada-cs-enrollment/fulltext

(*Communications of the ACM*, v 51, no 10 (Oct 2008), pp 66–70.)

DEPARTMENTAL ALUMNI

Mr. John Fry (founder of Fry's Electronics)

Dr. Nicholas Hellenthal (Urologist – UC Davis)

Dr. Kevin McCurley (Research Scientist at Google)

Prof. Maria Girardi (Univ. South Carolina)

Dr. James Hafner (Research Scientist at IBM)

Dr. Brian Conrey (Director, American Institute of Mathematics)

Prof. Stephen DeBacker (Univ. Michigan)

DEPARTMENT RESOURCES AND ACTIVITIES

- Faculty: available, professionally active, engaged in research



- Sussman Room (Student Commons): open 8am–5pm, tutors (Honor Society members)



- Activities: Beginning of Year BBQ, Career Night Dinner, Putnam Math Competition, Undergraduate research projects, internships



- Student Organizations: Math/CS Society, Pi Mu Epsilon Honor Society, Upsilon Pi Epsilon Honor Society, Mathematical Association of America Student Chapter

COMPUTER SCIENCE VS. COMPUTER ENGINEERING

- CS – in the context of the College of Arts and Sciences: the number of electives emphasizes breadth of “liberal education”
Emphasis on “science” aspects of computing – theory, aspects that won’t go out of date
- Computer Engineering – in the context of the School of Engineering: few electives
Emphasis on design and “engineering,” human-made aspects of computing (operating systems, networks, hardware, large software projects). Has a second, “Web Design and Engineering” major.
Sponsors graduate programs.

- Both majors take a common set of Math and CS courses. Both take theoretical (e.g., Theory of Algorithms) and hardware (e.g., Logic Design) courses. Not a fine line of distinction between SOFTWARE and HARDWARE. (There are courses in “software engineering.”)
- *It is possible to complete a BS in CS and an MS in COEN in 5 years!* On-line sample curriculum shows how to schedule courses:
<http://math.scu.edu/samplecurrcsms2009.shtml>

Also see <http://www.scu.edu/computing> for additional information about different “flavors” of computing programs at SCU or elsewhere (Business, Engineering, Science approaches).

\implies *Thanks for coming to visit us at SCU!*

We hope to see you in September!

QUESTIONS?