Enhanced opportunities for highly motivated undergraduates

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We must prepare our students for jobs that may not yet exist.
How do we do that at Mudd?

- Located in Claremont, CA, about 60 years old
- 800 undergraduate students
- Gender balanced, rapidly increasing diversity
- Member of 7 college consortium
- 99% residential
- Private Liberal Arts: 6 majors (STEM), with Humanities, Social Sciences, Arts concentration
- Broad education, impact on society
Core (all 800 students) Provides Interdisciplinary Opportunities

**Calculus:** Required prior to admission

**Mathematics:** 3 semesters

**Physics:** 2-1/2 semesters with lab

**Chemistry:** 1-1/2 semesters with lab

**Biology:** 1 semester

**Engineering:** 1 semester (systems engineering)

**Computer Science:** 1 semester

**Writing:** 1½ semester (Intro to Academic Writing)

**Choice Lab:** Emphasizing experiential learning

**Humanities, Social Sciences and Arts:** 11 semesters
HMC Math Core (all students)

Frosh year

Fall
- Proof
- Calc
- Prob/Stat

Spring
- Lin Al I
- DE I

Sophomore year

Fall
- Multi Var
- LinAl DE II

Spring
- Core

Python (CS)

WRIT 1 (all)
Opportunities

Python (CS)

WRIT 1 (all)
HMC Math Major

**Frosh year +**

**Fall**
- Proof Calc
- Prob/St at

**Spring**
- Lin Al I
- DE I

**Sophomore year +**

**Fall**
- Multi Var
- LinAl DE II

**Spring**
- DE III
- LinAl III

**Core (all students)**
- Discrete
- Algebra
- Analysis
- PDE
- Probability
- Speaking
- Comp. Math
- Electives + Colloquium

**Math majors**
- Python (CS)
- WRIT 1 (all)
Opportunities

MATH FORUM

Speaking

Comp. Math

Electives + colloquium
HMC Mathematics Major required year-long senior capstone

Thesis

- individual project
- faculty mentor
- semester class
- external presentation
- poster
- thesis doc
- 70 papers since 2000
- 4 student team

Faculty Mentor

Industry Liaison

Professional Development

Site Visits, Presentations

Poster

Clinic Report
HMC Mathematics Major
required year-long senior capstone

Thesis

• individual project
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• 70 papers since 2000
• 4 student team

Clinic

• faculty mentor
• industry liaison
• professional development
• site visits, presentations
• poster
• clinic report

Equally valued, not always career-aligned.
2013-14 Clinic Sponsors
Engineering, Comp Sci, Math, Physics
Industrial Mathematics
Opportunity = Preparation + Access
Industrial Mathematics
Opportunity = Preparation + Access

• BIG Math Network (business, industry, gov’t)
• NSF Report from recent IPAM workshop
• Summer Internships
• Training/Boot camps (programming, data science)
• PIC Math (preparation for industrial careers)
• Modeling/Simulation Courses, Online Classes
• Mathematical Modeling challenges (MCM/ICM)
• Study groups/workshops (IMA, WPI/DeI/NJIT/RPI, NCSU, more)

Students and faculty often training together.
How can mathematics majors land terrific internships?

• Learn some programming, statistics, algorithms.
• Don’t search for “math” – find a company of interest and look at job descriptions.
• Go talk to a company. Ask what kinds of problems they solve. Propose a project.
• Find a problem posted online. Work on it.
• Learn how to pitch a problem solution to a lay audience.
• Demonstrate initiative – independent study, research, teamwork.
• **Do not be put off by long list of job requirements. Have a few strong skills to bring to the table.**
2015 Math Major Graduates

BIG Jobs

Grad School (eventually about 60%)

Unknown (5) TOTAL (41, about 20% of our students)
How will you prepare your students for jobs that may not yet exist?
Thank you

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