DATA SCIENCE AT MACALESTER COLLEGE

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Macalester student demographic

~2000 students living on or close to campus
~ 35% admission rate

~18% Pell grant recipients
~15% international (~75 different countries)
~ 20% students of color
~13% of FY class are first generation
~ 31 is ACT average for FY class
Department of Mathematics, Statistics and Computer Science [MSCS]

- $T/TT=7M+3S+3CS$. Several visitors.
- This year ~85 graduating majors
- Largest partner disciplines: biology and economics
MSCS Programs

**MAJORS**
- Mathematics
- Computer Science
- Applied Mathematics & Statistics

**MINORS**
- Mathematics
- Computer Science
- Statistics
- Data Science
Macalester’s Data Science Minor

Requirements
• 2 CS courses
• 2 statistics courses
• 2 “domain” courses
• Final “integrative essay”
Sample “Domain Courses”

Astronomy
• PHYS 120: Astronomical Techniques
• PHYS 440: Observational Astronomy

Bioinformatics
• BIOL 260: Genetics
• COMP 302: Computational Biology

Computational Linguistics
• LING100: Intro to Linguistics
• LING 294: Computational Methods

Computational Sociology
• SOCI 269: Social Science Inquiry
• SOCI 190 Criminal Behavior/Social Control
• SOCI 283 Economic Sociology
Data-Driven Journalism
- MCST 114: News Reporting and Writing and one of
- MCST 355: Electronic Journalism
- MCST 357: New Media

Ecology
- BIOL 285: Ecology and one of
- BIOL 342: Animal Behavior/Ecology
- BIOL 344: Aquatic Ecology
- BIOL 345: Field Botany

Environmental Science and Policy
- ENVI 231: Environmental Econ and one of
- ENVI 130: Science of Renewable Energy
- ENVI 140: The Earths Climate System
- ENVI 150: Climate and Society
- ENVI 160: Dynamic Earth, Global Change
Geographic Analytics
• GEOG 225: GIS, & 1 GEOG 362: Remote Sensing; ETC

Neuroscience
• NEUR 244: Cognitive Neuroscience
• NEUR 385: Functional MRI

Political Analytics
• POLY 214: Cyber Politics
• POLY 269: Empirical Research Methods

Quantitative Economics
• ECON 358: Securities Analysis
• ECON 381: Econometrics
• ECON 420: Quantitative Macro Analysis
• ECON 485: Empirical Finance

Quantitative Public Health
• BIOL 355: Virology
• BIOL 357: Immunology
• GEOG 256: Medical Geography
• MATH 125: Epidemiology
A Common Vision for Undergraduate Mathematical Sciences Programs

TPSE & Common Vision both launched to
• address collective challenges and
• capitalize on opportunities
found in the NRC and PCAST reports.

Analyzed AMATYC, AMS, ASA, MAA, SIAM curricula & pedagogy guides.
“Calls to action”
• Update curriculum
• Articulate pathways between K-12 curriculum and first college courses
• Scale-up evidence based pedagogical methods
• Remove barriers facing students at critical transition points (e.g., placement, transfer)
• Establish stronger connections to other disciplines