



Montgomery College
Science, Engineering & Mathematics

Montgomery College STEM Summer Bridge

What is STEM?

Advantages and Opportunities

July 10, 2013

Michael Mehalick
Internship Coordinator
Science, Engineering & Mathematics



What is STEM?

- **S** – [Science](#)
 - astronomy, biochemistry, biology, chemistry, environmental science, geology, physics
- **T** – Technology
 - architecture, biotechnology, computer science, [construction management](#), [information technology](#), nanotechnology,
- **E** – [Engineering](#)
 - aerospace, bioengineering, chemical, civil, computer, general, electrical, fire protection, materials science, mechanical, nuclear
- **M** – [Mathematics](#)
 - algebra, geometry, trigonometry, calculus



What is STEM?

- [The Hidden STEM Economy](#) - Jonathan Rothwell
- As of 2011, 26 million U.S. jobs—20 % of all jobs—require high level of knowledge in any one STEM field
- Half of all STEM jobs do not require a 4-year degree
- STEM jobs requiring at least a bachelor's degree highly clustered in certain metropolitan areas
- Sub-bachelor's STEM jobs prevalent in every large metropolitan area



STEM at MC

- First two years toward Bachelor of Science
- Life science, environmental science and policy, engineering, chemistry, physics, mathematics, computer science, biotechnology, and more!
- Fall 2012 enrollment 3,730 students



MC STEM Advantages

- [Advising & mentoring](#)
- Small class size
- Affordable
- STEM Facilities
- Resources
- Student activities
- Articulation & transfer programs



MC Advising & Mentoring

- Faculty advisors
- SEM Internship Coordinator (FT)
 - Writing workshops
 - Internship and scholarship opportunity info
 - Partnerships with industry, federal agencies, universities
- Many faculty advise student clubs
- Currently developing [Advising Web Sites](#)
- Faculty at Germantown, Rockville, Takoma Park/Silver Spring



MC Small Class Size

- Calculus II
 - Montgomery College – 28 seats
 - 4-year university – 136 - 160 seats
- General Physics I
 - Montgomery College – 44 seats
 - 4-year university – 105 seats
- Chemistry II/Chemistry for Engineers
 - Montgomery College – 24 – 32 seats
 - 4-year university – 126/180 seats



MC Small Class Size

- Principles of Biology I
 - Montgomery College – 24 seats
 - 4-year university – 138 - 230 seats
- Chemistry I
 - Montgomery College – 24 – 38 seats
 - 4-year university – 96 - 185 seats
- Organic Chemistry I
 - Montgomery College – 32 seats
 - 4-year university – 200 - 240 seats



MC Affordable

- [Montgomery College](#) 2013–14 (+ 0.0%)
 - tuition & fees \$4,452 – in-county - 15 cr./sem.
- [Univ. of Maryland CP](#) 2013–14 (+ 2.7%)
 - tuition & fees \$9,161 – in-state – full-time
- [U. of Maryland Balt. Co.](#) 2013–14 (+ 3.2%)
 - tuition & fees \$10,068 – in-state – full-time



MC STEM Facilities

Rockville

- Science Center – opened July 2011
 - 6 physical science and engineering labs
 - 8 biology, 2 anatomy & phys., 2 environmental sci., microbio., genetics labs
 - 6 general, 3 organic chem. labs, project labs
- Science East – renovation complete 2014
- Science West – renovation planning phase



MC STEM Facilities

- Germantown – Bioscience Education Center
 - Under construction – opening in 2014
 - Classrooms, laboratories, conference center
- Takoma Park/SS – Science & Math Center
 - Initial planning has begun
 - Renovation of Science North & Science South



MC Resources

- External Grants
 - Fund for the Improvement of Postsecondary Education (FIPSE) – mobile classrooms & 3-D printer
 - NSF S-STEM – [On RAMP to STEM Scholarships](#)
 - NSF STEP - \$1.8M for 5 years – [Graduate & Transfer](#)
 - [NSF Noyce Teacher Scholarship Program](#)
 - [Hillman Entrepreneurs Program](#)
- Individual donors arranged by the MC Institutional Advancement Office - [MC Foundation Scholarships](#)



(more!) MC Resources

- Germantown – [MAPEL Center](#) – HT229
 - Tutorial Services, Workshops, Computer Services, Calculator Services, Textbook Services, Video Services & Testing Services
 - 9:30 am – 7pm M - Th, 10 am - 4 pm F, and 9 am – 12 pm Sa
- Rockville - [Math/Science Center](#) – MT002
 - Tutoring, current texts, computer lab, calculators & review sessions
 - M - Th - 8 am - 8 pm, F 8 am - 4 pm, S 10 am – 3 pm
- Takoma Park/Silver Spring - [Science Learning Center](#)
 - Science North 101/102
 - Tutoring; workshops/study groups; CDs, videos, models, microscopes, reference books, handouts & and computer programs
 - 8:30 am – 6 pm M - Th, 9 am - 3 pm F, and 10 am – 4 pm Sa



MC STEM Opportunities

- Internships
- MC Research Experiences
- National Science Foundation (REU)
- Student Pathways – Federal Government
- Student competitions
- Specialized transfer programs



MC Internships

- MC Institutional Advancement
 - Partnerships with local agencies/employers
 - Scholarship funding and internships
- MC Student Career Services
 - eJobs Career Services Management System
 - Internship Coordinator/Job Development
 - Resume & cover letter writing



MC Research Experiences

- New course SC 297 Scientific Research
- MC Speech Processing Lab
- [Howard University CREST Nanoscale Analytical Sciences Research and Education Center](#)
- Georgetown University – Howard Hughes Medical Institute



National Science Foundation

- Research Experiences for Undergraduates
- UMCP – [MERIT Biosystems Internships for Engineers \(BIEN\)](#)
- UMCP - Louis Stokes Alliance for Minority Participation Program
- [NIST Summer Undergraduate Research Fellowship \(SURF\)](#)



Student Pathways

- U.S. Office of Personnel Management
- Federal government internship and career experience opportunities
- Agencies building workforce talent to mitigate “[retirement tsunami](#)”
- [Retirements ahead of projections for 2013](#)



MC Student Competitions

- [National Student Solar Spectrograph Competition](#)
 - 2012 Winners of Science Observation Award
- [IEEE Student Activities Conference](#)
 - Micromouse & other competitions
- [Prince George's Community College Annual Mathematics Tournament](#)



MC Specialized Programs

- [U.S. Air Force ROTC – UM College Park](#)
- [Southern Maryland ME Program](#)
 - A. James Clark School of Engineering (UMCP)
 - Naval Air Warfare Center/Aircraft Division
- [The George Washington University - SEAS](#)
 - [Elliott Engineering Scholarships](#)
 - [Information Assurance Scholarship for Service Program](#)



Articulation & Transfer

- University System of Maryland (USM)
 - [UMCP - MTAP](#), [UMUC - CCAP](#), [UMBC - TSA](#), [MSU – Connect](#)
 - Towson, Salisbury, UMB, UB, UMES, BSU, Frostburg
- Regional Colleges & Universities
 - [American University](#), [Shepherd University](#), [Universities at Shady Grove](#)
 - Howard, Washington Adventist, Capitol College, Trinity, GWU, CUA, UDC, WVU



Montgomery College
Science, Engineering & Mathematics

STEM Summer Bridge

What is STEM?

Thanks!

July 10, 2013

These slides will be posted with live links on the web:
<http://cms.montgomerycollege.edu/seminternships.aspx>

Michael Mehalick
Internship Coordinator
Science, Engineering and Mathematics