

**Montgomery College
Montgomery County, Maryland**

**Montgomery County Sister City Delegation
Trip to India**

November 2014

Facts about U.S. Community Colleges

- More than 1,200 community colleges in the U.S., enrolling 8.3 million students, or 45% of all U.S. undergraduate students
- Total effect of America's community colleges on the U.S. economy in 2012 was \$809 billion, approximately equal to 5.4% of the nation's Gross Domestic Product (AACC) and 15.5 million jobs per year
- Community colleges offer promise, with open-access admission and a focus on job-ready programs of study; provide strong workforce development programs in all areas that are closely aligned with local and regional industry
- Have the ability to educate a large and diverse population of students

Montgomery College

- Montgomery College is an open-access community college, committed to offering opportunity to any student who comes to us with an educational or career goal
- MC enrolls more than 26,000 credit students and 38,000 non-credit students
- Our student population is very diverse, ethnically and economically, reflective of Montgomery County demographics



Montgomery College Academic Offerings

College academics are divided into four collegewide units

1. Workforce Development & Continuing Education, Applied Technologies – A unit devoted to creating future trades workers and to lifelong learning
2. Science, Technology, Engineering, and Mathematics – A unit that specializes in STEM fields, including engineering, biotechnology, cyber security, the physical and life sciences, and mathematics
3. Communication, Health Sciences, Health & Physical Education, Humanities
4. Arts, Business, Education, English, and Social Sciences

Montgomery College



Career Education Programs at Montgomery College

**Growing and Maintaining a Vital Workforce
Career – Occupational – Technical – Workforce –
Transfer Programs**



Career Education Programs

Who are we serving?

- Students
 - Pre-employment career preparation
 - Post-employment career development
- Employers
 - Individual business owners
 - Trade association groups
 - Trade unions
- Residents
 - Individuals and community groups

Career Education Programs

Growing and Maintaining a Vital Workforce

- Career exploration
- Preparing for a new career
- Retaining currency in current career
- Upgrading skills to stay ahead of technological advances in career field
- Obtaining new certifications or industry driven credentials

Career Education Programs

Course and Program Formats

- **Program Delivery Options:**
 - Customized Contract Training for Industry
 - Interactive Distance Education
 - Apprenticeship Related Instruction
 - On-site Training
 - Long or Short Term Training
 - Credit or Credit-Free Courses
 - Continuing Studies / Certificate Programs
 - Associate of Applied Science Degrees

Career Education Programs

What do programs deliver?

- General education contextual skill development
- Technical skills
- Industry certification standards
- Strong partnerships with businesses and trade associations
- Practitioner faculty drawn from industry
- Applied learning in practical workplace applications
- Labor market data trends
- Continuous updating
- Continuum of educational options
 - Pre- and post-degree offerings
 - Apprenticeship > Associate Degree > Bachelors Degree

Career Education Programs

Example of a Typical Open Enrollment Program

Automotive Technology

- Designed around industry standards – ASE
- Industry certification exams
- Faculty carry ASE certifications
- Employer advisory group guides program revisions
- Program itself is NATEF approved
- Provides credit and noncredit coursework
- Hosts an industry-based cooperative education program
- Provides contract training for local employer groups
- Significant industry and employer support



Career Education Programs

GED® Test Preparation

New online exam has four tests:

- Reasoning through Language Arts
- Mathematical Reasoning
- Science
- Social Studies

Montgomery College GED Preparation Program

- Adult Basic Education and Pre-GED levels of class are free.
- Students must pay tuition for the GED® level classes.
- Students pay for their own books
- Five locations around the County with AM, PM, and Saturday schedules
- Students attend an orientation and take a pretest to enroll.

Career Education Programs

GED® Test Preparation

Enrollment Requirements

- 16 years of age or older
- Montgomery County resident
- Officially withdrawn from public or private high school
- Never received a high school or college diploma in the U.S. or other country

Complete program information is available at

<http://www.montgomerycollege.edu/wdce/aelg/ged.htm>

Or just enter GED into search box on College website

Career Education Programs

Specialized Career Programs: *Work Plus!*

Work Plus! programs integrate English language, basic skills, and workforce readiness along with content-instruction for a marketable credential. These low-cost/no-cost programs feature links to employment and wrap-around services. Applicants must test within the score range to be considered. Applicants for certificate level classes must be legally able to work in the U.S.

ESOL/Basic Skills Levels		
Beginning Level Classes		Intermediate Certificate Level Classes
ESOL for Healthcare Jobs	➔	Certified Nursing Assistant
ESOL for Building Trades Jobs	➔	Certified Apartment Maintenance Technician
<i>Contextualized ESOL/Basic Skills model</i>		<i>Co-teaching model: ESOL/Basic Skills instructor with content instructor</i>

Career Education Programs

Examples of Credit Career Programs

Accounting Advertising Art / Illustration
Applied Geography / Geographic
Information Systems
Architectural Technology Automotive
Technology
Biotechnology
Building Trades Technology
Computer Applications
Computer Graphics
Computer Publishing & Printing
Management Computer Science
Construction Management
Criminal Justice
Diagnostic Medical Sonography
Early Childhood Education
Emergency Medical Technician
Engineering Technologies
Fire and Emergency Services
Management

Graphic Design
Health Information Technology
Hospitality Management
Information Systems
Interior Design
Landscape Technology Management
Mental Health Associate
Microcomputer Technician
Network Engineer
Nursing
Paralegal Studies
Photography
Physical Therapist Assistant
Radiologic Technology
Radio / Television
Surgical Technology
Technical Writing
Web Careers

Career Education Programs

Examples of Noncredit Career Offerings

Apprenticeship Programs	Home Care Companion
Automotive Technician Training	Home Inspection
Biotechnology Certification	Hospitality
Business and Entrepreneurship	Human Resources
Building Trades	Insurance
Carpentry	Interior Design
Certified Nursing Assistant	LEED AP
Early childhood Education / Childcare	Management and Supervision
Commercial Drivers License	Medicine Aid
Computer Repair	Networking Engineering Certification
Computer Networking	Pharmacy Technician
Computer Programming	Physician's Office Assistant
Dental Assistant Electrician	Printing and Computer Publishing
Food Safety Certification	Project Management
Green Energy and Sustainability	Real Estate Licensure Preparation
Heating, Ventilation, Air Conditioning and Refrigeration	Small Business and Entrepreneurship
Hispanic Business and Training Institute	Transportation Safety
	Webpage Design
	Welding

Career Education Programs

Career Coach Web Resource

- Public resource for career exploration
- Link can be found on MC home page
- Shows career trends, forecasts, wages, educational requirements and links to actual job listings and Montgomery College program listings – credit and noncredit
- www.montgomerycollege.edu





The Cybersecurity Program at Montgomery College

Montgomery College's Cybersecurity Program Montgomery County and Maryland

- A National Center for Cybersecurity
- Over 130,000 jobs in IT, 49% over the US national average
- 12 Major Military Installations
- Home to the U.S. Cyber Command
- 50 Federal Agencies
- Defense Information Systems Agency,
- National Security Agency and
- NIST
- National Cybersecurity Center of Excellence - See more at:
<http://business.maryland.gov/about/key-industries/it-and-cybersecurity#sthash.BJztfnm2.dpuf>

Cybersecurity Business Partnerships

“For the first time, Montgomery College and industry giant **Lockheed Martin** join together to meet the nation’s growing demand for cyber security professionals. Register now to benefit from this exciting partnership where you will learn from the industry’s leading experts in secure software development.”



Cybersecurity National Recognition

Montgomery College was awarded the title

National Center of Academic Excellence in Information Assurance 2 Year Education

by the National Security Administration and the Department of
Homeland Security

Cybersecurity

Recent Award of \$15 Million Federal Grant

- Montgomery College will administer grant to fund Cyber Technology Pathways Career Pathways Project at 14 Maryland Community Colleges
- Working in partnership with business to develop training pathways with low income workers with minimum skills:
 - IBM
 - Raytheon
 - Lockheed Martin
 - MedStar
 - Booz Allen

Cybersecurity Curriculum “maps” to CNSS/NSA standards

The Committee on National Security Systems and the National Security Agency have certified that the Montgomery College courseware meets the National Training Standards for Information Systems Security (INFOSEC) Professionals, NSTISSI Nos. 4011 and 4013. These standards are recognized by the federal government for employment and promotion in many technical positions

Cybersecurity Degree Program

- MC offers A.A.S. and Certificates in Cybersecurity
- Articulation agreements with
 - Montgomery County Public High Schools
 - University of Maryland, University College
 - Towson University
 - Capitol College
 - and, we have students who have received cybersecurity scholarships at George Washington University

Cybersecurity Jobs in the Field

- Network Security Engineer
- Information Security Analyst
- Network Security Specialist
- Network Security Administrator
- Network Security Architect
- Systems Engineer

Cybersecurity Program Prepares Students for Certifications

- Computing Technology Industry Association's (CompTIA) A+, Network + and Security + certifications;
- Microsoft's Certified IT Professional (MCIPT) certification;
- Cisco's Certified Network Associate (CCNA) certification;
- Security Certified Network Professional (SCNP) certification; and
- Certified Information Systems Security Professional (CISSP) certification.

Cybersecurity

The Competitive Edge

Students actively participate in cyber competitions like:

- Collegiate Cyber Defense Competitions (CCDC)
- Digital Forensics Competition
- National Cyber League
- Cybersecurity Awareness Poster Competition



Cybersecurity CyberWatch

MC is a founding member of CyberWatch

- Consortium of over 70 colleges and universities nationwide
- Purpose of CyberWatch
 - Create a pool of skilled cybersecurity/ networking technicians ready to enter the workforce at the A.A.S. degree level
 - Provide 2+2+2 pathways for students: high school, 2-year colleges, 4-year universities...and beyond
 - Develop cybersecurity curriculum mapped to NSA standards



The Biotechnology Program at Montgomery College

Biotechnology

Meeting the demand for a skilled workforce



The Montgomery College Biotechnology Program is designed to meet the workforce needs of the Biotechnology industry.

Montgomery County, MD is a world-class center for biotechnology.



The Montgomery College Biotechnology Program is the largest program in Maryland.

Biotechnology Program Mission

- Prepare students for entry-level Biotechnology jobs in Maryland
- Prepare students for transfer to bachelor's degree programs in life sciences
- Foster academic, industry, and government partnerships
- Play a critical role in the emerging Montgomery County Educational Continuum: **HS, AAS, BS, MS, PhD**

Biotechnology Program Curriculum: Academic and Non-academic focus

Industry relevance

- Curriculum content and rigor shaped by industry

Hands on experience

- Laboratory / Hands on focus
- Documentation emphasis
- SOP or batch record format for labs

Workplace behavior

- Team work, attitude, time management

Student needs

- Classes offered day and evening
- Scholarships
- Job Placement Assistance



Biotechnology

The Academic Program - Credit Courses (Degree or Certificate)

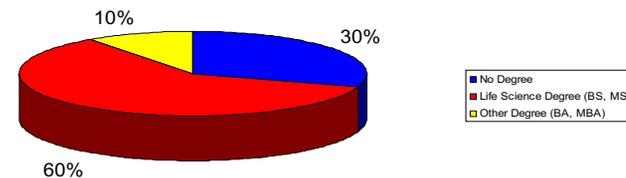
Credit courses leading to a certificate or degree

- BIOT 110 Introduction to Biotechnology (online and classroom)
- BIOT 120 Cell Culture and Cell Function
- BIOT 200 Protein Biotechnology
- BIOT 230 Immunology and Immunological Methods
- BIOT 240 Nucleic Acid Methods
- BIOT 250 Biomanufacturing Principles
- BIOT 260 Molecular Diagnostics (in preparation)
- Workforce Development Courses – BioTrain / Customized

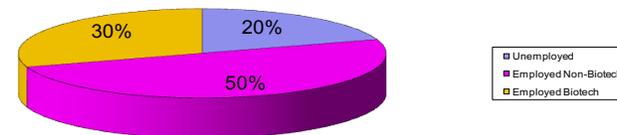
Biotechnology Key Demographics

- 40-60% of the students already have a BS or MS degree in a Life Science
- Many students are already employed, some in the Biotechnology Industry
- The student mix is very diverse – age, race, country of origin

Biotechnology Student Demographics
Degree Status



Biotechnology Student Demographics
Employment Status



Biotechnology Options for Students

AAS Biotechnology Degree

- Enables students to transfer to a 4-year program
- Articulation agreements with
UMBC*
UMUC
USG
UMB
Towson University
Hood College
Stevenson University
Mount St. Mary's University*
George Washington
University*

* Articulation agreements in progress

Biotechnology Certificate

Designed for students with a 4-year or MS degree



Biomanufacturing Certificate

"Fast track" to a job
Continue on for AAS

Biotechnology

Meeting Workforce Needs for the Biotech Industry = Opportunities for Our Students

- Since 2000 over 250 Biotech students employed at local Biotech companies
- Between 2014 – 2018: an estimated 100 -300 new entry level laboratory job openings per year in companies that partner with Montgomery College
- Starting salary with Associate's Degree \$35,000 - \$42,000 per year plus benefits including tuition assistance



Meso Scale Discovery



Quality is in our blood

LONZA

Biotechnology

Biotech Jobs for Our Students

Vaccine Manufacturing

Therapeutic Antibody Production

Preclinical Studies and Safety Testing

Cell Based Assays

Virus Production and Testing

Diagnostics / Biomarker Discovery

Biotechnology

The Ideal Industry Partnership



Human Genome Sciences defined the gold standard industry partner!



Curriculum development

Hire students

Equipment donations

Provide scholarships

Adjunct faculty

And the list goes on...



Biotechnology

The Ideal Industry Partnership

GlaxoSmithKline Preserves Strong Partnership



- April 2012: GlaxoSmithKline acquires Human Genome Science.
- April 2013: Montgomery College receives a \$100,000 grant from GlaxoSmithKline that will create the GSK Biotechnology & Bio-manufacturing Endowed Scholarship to support Montgomery College's efforts to help ensure a highly-trained pipeline of employees for the Maryland biotechnology workforce.

Biotechnology

Bioscience Education Center - 2014

- Dedicated Labs
 - Cell Culture
 - Proteins and Immunology
 - Nucleic Acids (DNA)
- Biomanufacturing suite
 - Simulated cGMP environment
- Collaboration with the Biotech industry
 - Core equipment for teaching and for use (fee based) by local Biotech companies
 - Workshops, “lunch and learns”
 - Limited Internships



Biotechnology

Preparing Students for a STEM Career

- Bioscience Education Center with state-of-the-art laboratories and facilities
- Well-trained and educated workforce
- Internships and employment in the industry
- Baccalaureate degree in biotechnology available in Montgomery County
- Scientists successfully transitioned from research to business

Our vision realized.....

www.montgomerycollege.edu/biotech



Questions?

Thank you

www.montgomerycollege.edu