

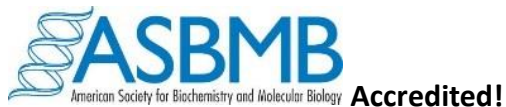


MOLECULAR BIOLOGY • BIOCHEMISTRY • BIOINFORMATICS

<https://www.towson.edu/MB3>

An interdisciplinary major focused on the chemistry of life, cellular function and the computing tools to study life.

### Why MB3?



Interdisciplinary

Emphasis on Hands on Experience

High Standards

### What Do I Do With an MB3 Degree?

Molecular Biology

Medical/PA School

Biomedical Research

Biotechnology Industry

Graduate School

Biochemistry

Medical/PA School

Pharmacy School

Biomedical Research

Biotechnology Industry

Graduate School

Bioinformatics

Biomedical Research

Biotechnology Industry

Graduate School in CS\IT or

medical informatics



### Hands on Experience in the Classroom: real, novel research!

- Microbes in the Gut: Introductory Biology
- Identification and characterization of new genes in E. coli: Molecular Biology Laboratory
- Evolution of animal immune systems: Cell Biology Laboratory
- Structure/function analysis of mutations in a bacterial toxin: Biochemistry Laboratory

### Hands on Experience in Faculty Research Laboratories: 85% of majors complete at least one semester of research with a faculty mentor

- Dr. Petra Tsuji: The role of diet in cancer
- Dr. Barry Margulies: Development of implants to control Herpes virus outbreaks
- Dr. Anna Marie Soto: Development of DNA binding drugs

### Recent Internships:

Johns Hopkins School of Medicine, University of Maryland School of Medicine, University of Wisconsin School of Medicine, University of Massachusetts, National Institutes of Health, United States Department of Agriculture, US Army Medical Research Institute of Chemical Defense, Genome Sciences (GSK), Osiris Pharmaceuticals, Becton Dickinson.

**REQUIREMENTS FOR THE MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOINFORMATICS (MB3) MAJOR  
REQUIRED COURSES FOR ALL CONCENTRATIONS (47)**

<b>Biology</b>	<b>Chemistry</b>	<b>Math</b>	<b>MBBB</b>	<b>Research</b>
Biol 200 (Intro cells, gen.) (4)	Chem 131/L, 132/L (General) (4,4)	MATH 273: Calculus I (4)	MBBB 201: Programming for Biologists (4) OR COSC 175: General CS (4)	MB3 Capstone (3) OR
Biol 206 (Eco and Evo) (4)	Chem 351 (Biochem I) (3)	MATH 237: Biostatistics (4)	MBBB 301: Intro to Bioinfo (4)	Independent Research (3) <b>OR</b>
Biol 309 (Genetics) (4)			MBBB 493 (Bioethics) (1)	Approved Upper Level Course (3-4)
BIOL 409 (Mol Bio) (4)				

**MBBB CONCENTRATIONS (Complete one of the following three columns)**

<b>MOLECULAR BIOLOGY (29 – 31)</b>	<b>BIOCHEMISTRY (33)</b>	<b>BIOINFORMATICS (30 – 35)</b>
Biol 408 (Cell Biology) (4)  <u>One of the following labs:</u> Biol 312 (Gen Lab) (2), Biol 412 (Cell Bio Lab) (3), Biol 410 (Mol Biol Lab) (3)  Chem 331, 332 (Organic) (5,5)  Phys 211+212 (Gen'l Physics) (4,4)  One approved elective (Biol, Chem, or Cosc) at the 300-400 level (3-4)	Chem 210 (Analytical Chem) (5) Chem 331+332 (Organic Chem) (5,5) Chem 345 (Physical Chem) (3) Chem 356 (Biochem lab) (2) Chem 357 (Biochem II) (3) Chem 372 (Intermed. lab I) (2)  <u>One of the following pairs of classes:</u> Phys 211+212 (Gen'l Physics) (4,4) Phys 241+242 (Gen'l Physics w/ calc) (4,4)	Cosc 236+237 (Intro to Computers) (4,4) Cosc 336 (Data and algorithms) (4)  Math 274 (Calc II) (4)  MBBB 401 (Adv bioinformatics) (3)  <u>One of the following:</u> Cis 458 (Organiz database mgmt) (3) Cosc 457 (Database mgmt syst) (3)  <u>One of the following:</u> Math 263 (Discrete Math) (3) <i>or</i> MBBB 315 (Genomics) (3)  <u>One of the following:</u> Chem 331+332 (Organic) (5,5) Chem 330 (Organic essentials) (5)