

**HARFORD COMMUNITY COLLEGE - CHEMISTRY (Requiring Calculus-based Physics) A.S. DEGREE  
TOWSON UNIVERSITY/ Molecular Biology, Biochemistry and Bioinformatics (MB3) - BIOCHEMISTRY CONCENTRATION B.S. DEGREE**

HARFORD COMMUNITY COLLEGE			TOWSON UNIVERSITY			
COURSE #	COURSE TITLE	CRS.	TU EQUIVALENCY	CORE	COMMENTS	COURSE ID#
ENG 101	English Composition (GE) (Grade of C or better)	3	TSEM 102 WAIVED	1.	Towson Seminar	2348
MATH 203	Calculus I (GM)	4	MATH 273	3.	English Composition Mathematics	4407
GH	Arts & Humanities (GH)	3		4.	Creativity & Creative Development	
GB	Behavioral/Social Science (GB)	3	Depends on choice.	5.		
CHEM 111	General Chemistry I (GL)	4	Depends on choice.	6.	Social & Behavioral Sciences	
CHEM 112	General Chemistry II A (GL)	4	CHEM 131/131L CHEM 132/ 132L	7. 8.	Biological & Physical Science w/Lab Biological & Physical Science	13097/13098 13099/13100
GB*	Behavioral & Social Science (GB)	3	Depends on choice.	9. 10.	Advanced Writing Seminar Metropolitan Perspectives	
GH*	Arts & Humanities (GH)	3	Depends on choice.	11. 12.	The United States as a Nation Global Perspectives	
			Depends on choice.	13. 14.	Diversity & Difference Ethical Issues & Perspectives	
<b>Total CORE in Transfer</b>		<b>27</b>				
MATH 204	Calculus II (GM)	4	MATH 274			4408
PHYS 200/203 **	Gen Phys: Mechanics & Particle Dynamics w/LAB (GL/GS)	4	PHYS 241			6805
PHYS 204	Gen Phys: Vibrations, Waves, Heat, Electricity & Magnetism (GL)	4	PHYS 242			6806
CHEM 207	Organic Chemistry I	4	CHEM T31 (331)		Transfers as lower level credit.	10134
CHEM 208	Organic Chemistry II	4	CHEM T32 (332)		Transfers as lower level credit.	10135
BIO 120***	General Biology I (GL)	4	BIOL 200/200L			13759/13760
BIO 208***	Genetics	4	BIOL T09 (309)		Transfers as lower level credit	11379
CHEM 204	Analytical Chemistry	4	CHEM 210			1049
PHYS ED ELECT	Physical Education Elective	1	PHEA TLL			10564
<b>Program Requirements at Harford</b>		<b>33</b>				
<b>Total Harford Program Requirements</b>		<b>60</b>				
<b>Maximum Credits in Transfer</b>		<b>64</b>				

**64 Credit Maximum.** 15 Core Curriculum units must be completed at Towson University; 4. Creativity; 9. Advanced Writing Seminar; 10. Metropolitan Perspectives; 12. Global Perspectives; 14. Ethical Issues

\*One GB or GH course must also satisfy Diversity requirement at HCC.

\*\*Students must take PHYS 200 with PHYS 203 to receive equivalency of PHYS 241 to satisfy concentration requirement at TU.

\*\*\*Students should choose BIO 120; BIO 208, PHYS 200 and CHEM 204 as program electives at HCC to satisfy required courses for the MB3 major and Biochemistry concentration at TU.

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**CORE REQUIREMENTS TO BE COMPLETED AT TOWSON 15 UNITS**

CORE 4:	Creativity and Creative Development	(3 UNITS)
CORE 9:	Advanced Writing Seminar	(3 UNITS)
CORE 10:	Metropolitan Studies	(3 UNITS)
CORE 12:	Global Perspectives	(3 UNITS)
CORE 14:	Ethical Issues and Perspectives	(3 UNITS)

**PROGRAM REQUIREMENTS TO BE COMPLETED AT TOWSON 33-46 UNITS**

**REQUIRED COURSES: 23-31 UNITS**

BIOL 409	MOLECULAR BIOLOGY	(4 UNITS)
CHEM 351	BIOCHEMISTRY I	(3 UNITS)
MATH 237	ELEMENTARY BIostatISTICS	(4 UNITS)
MBBB201	PROGRAMMING FOR BIOLOGISTS OR	(4 UNITS)
COSC 175	GEN COMPUTER SCIENCE	(4 UNITS)
MBBB 301	INTRO TO BIOINFORMATICS	(4 UNITS)
MBBB 493	SEMINAR IN BIOETHICS	(1 UNIT)

BIOL200 &	INTRODUCTION TO CELL BIOLOGY AND GENETICS	(3 UNITS)
BIOL 200L	INTRODUCTION TO CELL BIOLOGY AND GENETICS LAB	(1 UNIT)
	<i>(If BIOL 120 was not taken at HCC as a program elective)</i>	
BIOL 309	GENETICS	(4 UNITS)
	<i>(If BIOL 208 was not taken at HCC as a program elective)</i>	

**SELECT ONE OF THE FOLLOWING:**

MBBB 495	CAPSTONE PROJECT*	(3 UNITS)
BIOL 491	ELECTIVE IN INDEPENDENT RESEARCH*	
CHEM 491	INTRODUCTION TO RESEARCH IN CHEMISTRY I*	
COSC 495	INDEPENDENT STUDY*	

**\*COURSES MAY BE REPEATED FOR A TOTAL OF 6 UNITS TOWARD THE MAJOR**

**COURSES FOR BIOCHEMISTRY CONCENTRATION: 10-15 UNITS**

CHEM 210	ANALYTICAL CHEMISTRY	(5 UNITS)
	<i>If CHEM 204 was not taken at HCC as a program elective)</i>	
CHEM 345	PRINCIPLES PHYSICAL CHEMISTRY	(3 UNITS)
CHEM 356	BIOCHEMISTRY LAB	(2 UNITS)
CHEM 357	BIOCHEMISTRY II OR	(3 UNITS)
BIOL/CHEM 450	ECOLOGICAL BIOCHEMISTRY	
CHEM 372	PHYSICAL CHEMISTRY LABORATORY	(2 UNITS)

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**Additional Bachelor Degree Requirements**

- **A C (2.0) or higher is required in all major and minor courses**
- **A cumulative grade point average (GPA) of 2.0 is required**
- **32 units of the bachelor's degree must be completed at the upper level (courses numbered 300 or above)**

<b>Total Credits to B.S. Degree</b>	<b>(120-121)</b>
<b>Harford Biology A.S. Degree</b>	<b>60</b>
<b>Completion of Core at TU</b>	<b>15</b>
<b>Completion of Major Requirements at TU</b>	<b>33-46</b>
<b>Elective Credits at TU</b>	<b>0-12</b>

