

HARFORD COMMUNITY COLLEGE/PHYSICS A.S. DEGREE
TOWSON UNIVERSITY/PHYSICS: Astrophysics 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 | ENGL 102 MATH 273 | 2. | English Composition Mathematics | 4407 |
| CIS 102 * | Introduction to Information Science (GI) | 3 | COSC 111 | 4. | Creativity & Creative Development | 13369 |
| GH | Arts & Humanities (GH) | 3 | Depends on choice. | 5. | Arts & Humanities | |
| GB | Behavioral & Social Science (GB) | 3 | Depends on choice. | 6. | Social & Behavioral Sciences | |
| CHEM 111 | General Chemistry I (GI) | 4 | CHEM 131/131L | 7. | Biological & Physical Science w/Lab | 13097/13098 |
| CHEM 112 | General Chemistry II A (GI) | 4 | CHEM 132/132L | 8. | Biological & Physical Science | 13099/13100 |
| | | | | 9. | Advanced Writing Seminar | |
| GH** | Arts & Humanities (GH) | 3 | Depends on choice. | 10. | Metropolitan Perspectives | |
| GB** | Behavioral & Social Science (GB) | 3 | Depends on choice. | 11. | The United States as a Nation | |
| ASTR 151/152**** | Intro to Astronomy (GS) w/Sky and Telescope Lab (GI) | 4 | ASTR 161 | 12. | Global Perspectives | |
| | | | | 13. | Diversity & Difference | 624 |
| | | | | 14. | Ethical Issues & Perspectives | |
| Total CORE in Transfer | | 34 | | | | |
| MATH 204 | Calculus II (GM) | 4 | MATH 274 | | | 4408 |
| MATH 206 | Calculus III | 4 | MATH 275 | | | 4409 |
| MATH 217 | Linear Algebra | 4 | MATH 265 | | | 4403 |
| MATH 208 | Elementary Differential Equations | 3 | MATH 174 (374) | | Transfers as lower-level credit. | 10493 |
| PHYS 200/203**** | Gen Phys: Mechanics & Particle Dynamics w/lab (GI/GS) | 4 | PHYS 241 | | | 6805 |
| PHYS 204 | Gen Phys: Vibrations, Waves, Heat, Electricity & Magnetism (GI) | 4 | PHYS 242 | | | 6806 |
| PHYS 205 | Gen Phys: Electrodynamics, Light Relativity & Modern Physics | 4 | PHYS 243 | | | 6807 |
| | Physical Education Elective | 1 | PHEA TLL | | | 10564 |
| Program Requirements at Harford | | 28 | | | | |
| Total Program Requirements at Harford | | 62 | | | | |
| Maximum Credits in Transfer | | 64 | | | | |

64 credit transfer maximum. 9 Core Curriculum units must be completed at Towson University: 9. Advanced Writing Seminar; 10. Metropolitan Perspectives and 14. Ethical Issues and Perspectives.

*Students should choose CIS 102 as their CIS Elective to satisfy a Core requirement at TU. Students who do not choose CIS 102 will be required to take a Core 4 course at TU.

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

***Students interested in the Astrophysics concentration should take ASTR 151 (Introduction to Astronomy) and ASTR 152 (Sky and Telescope Laboratory) as their General Elective to satisfy a Core requirement and a major requirement at TU. Note that students must have both ASTR 151 and ASTR 152 to receive credit for ASTR 161 and to

satisfy the required course for the Astrophysics concentration at TU. Students who do not take ASTR 151/152 will need to take ASTR 161 at TU and may be required to take

an additional CORE requirement at TU.

****Students must take PHYS 200 with PHYS 203 to receive equivalency of PHYS 241 and to satisfy a major requirement at TU.

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CORE REQUIREMENTS TO BE COMPLETED AT TOWSON 9-12 UNITS

| | | |
|----------|---------------------------------|-----------|
| CORE 9: | Advanced Writing Seminar | (3 UNITS) |
| CORE 10: | Metropolitan Studies | (3 UNITS) |
| CORE 14: | Ethical Issues and Perspectives | (3 UNITS) |

Students who did not take CIS 102 as CIS elective may require Core 4 (3 UNITS)

PROGRAM REQUIREMENTS TO BE COMPLETED AT TOWSON 46-50 UNITS

REQUIRED PHYSICS COURSES: 22 UNITS

| | | |
|----------|--|-----------|
| PHYS 185 | INTRODUCTORY HONORS SEMINAR IN PHYSICS | (1 UNIT) |
| PHYS 270 | COMPUTERS IN PHYSICS | (4 UNITS) |
| PHYS 307 | INTRODUCTORY MATHEMATICAL PHYSICS | (3 UNITS) |
| PHYS 311 | MODERN PHYSICS I | (3 UNITS) |
| PHYS 341 | INTERMEDIATE PHYSICS LABORATORY | (3 UNITS) |
| PHYS 351 | MECHANICS | (4 UNITS) |
| PHYS 354 | ELECTRICITY & MAGNETISM | (4 UNITS) |

COURSES FOR ASTROPHYSICS CONCENTRATION: 24-28 UNITS

- **ADDITIONAL PHYSICS/ASTROPHYSICS COURSES**
 - ASTR 161 GENERAL ASTRONOMY I (4 UNITS)
 - (If ASTR 151 and ASTR 152 were not taken as general electives at HC. Must have both ASTR 151 and 152)*
 - ASTR 162 GENERAL ASTRONOMY II (4 UNITS)
 - ASTR 303 ASTROPHYSICAL TECHNIQUES (3 UNITS)
 - ASTR 331 INTRODUCTION TO STELLAR ASTROPHYSICS (3 UNITS)
 - ASTR 385 ASTROPHYSICS SEMINAR (1 UNIT)
 - ASTR 432 GALAXIES AND COSMOLOGY (3 UNITS)
 - PHYS 312 MODERN PHYSICS II (3 UNITS)
 - PHYS 486 PHYSICS SEMINAR II (1 UNIT)
- **ELECTIVES**
 - AT LEAST SIX UNITS OF UPPER LEVEL PHYSICS OR ASTRONOMY ELECTIVES (6 UNITS)
- **NON-PHYSICS REQUIREMENTS (COMPLETED AT HCC) (0 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)

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|--|-------------------------|
| Total Credits to B.S. Degree | <u>(120-124)</u> |
| Harford Biology A.S. Degree | 62 |
| Completion of Core at TU | 9-12 |
| Completion of Major Requirements at TU | 46-50 |
| Elective Credits at TU | 0-3 |