College of Basic and Applied Sciences
Upper Division Form 2018-2019 Catalog

Student name     Student #
Major            PHYSICS    Minor     (Optional)
Concentration    APPLIED PHYSICS

Instructions: For students graduating in Fall 2018 or later, one (1) copy signed by major and minor advisors should be filed in DSB 120 three (3) semesters prior to graduation. An Intent to Graduate form must be submitted with this form.

<table>
<thead>
<tr>
<th>General Education Area</th>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Prerequisites/Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNICATION (9 hours)</td>
<td>ENGL 1010</td>
<td></td>
<td></td>
<td>Must earn a grade of C- or better</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENGL 1020</td>
<td></td>
<td></td>
<td>Must earn a grade of C- or better</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COMM 2200</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HISTORY (6 hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Choose two: HIST 2010, HIST 2020, HIST 2030</td>
<td>HIST _____</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HUMANITIES AND/OR FINE ARTS (9 hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Choose one: ENGL 2020, 2030 or HUM 2610.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATHEMATICS (3 hours) Recommend MATH 1910 (4 credits)</td>
<td>MATH 1910</td>
<td></td>
<td></td>
<td>See supporting coursework for prerequisites</td>
<td>3</td>
</tr>
<tr>
<td>SOCIAL/BEHAVIORAL SCIENCES (6 hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 41

Major Core (included in major GPA; 2.0 or better)

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Prerequisites/Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1010</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PHYS 2010/2011 or PHYS 2110/2111</td>
<td>PHYS _____</td>
<td>PHYS _____</td>
<td>PHYS 2010/2011: MATH 1710 with minimum grade of C (2.0 GPA), MATH 1730, or MATH 1910 PHYS 2110/2111: MATH 1910 with a minimum grade of C</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2020/2021 or PHYS 2120/2121</td>
<td>PHYS _____</td>
<td>PHYS _____</td>
<td>PHYS 2020/2021: PHYS 2011 PHYS 2120/2121: PHYS 2111 and MATH 1920 with a minimum grade of C</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3100 or PHYS 3070 (Fall only)</td>
<td>PHYS _____</td>
<td></td>
<td>PHYS 3100: PHYS 2021 or 2121 and MATH 1920 with a minimum grade of C PHYS 3070: PHYS 2021 or 2121 and MATH 1920</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3110 or PHYS 3080 (Spring only)</td>
<td>PHYS _____</td>
<td></td>
<td>PHYS 3110 Prereq: PHYS 3100 PHYS 3080 Prereq: PHYS 3070 or PHYS 3080</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3111</td>
<td></td>
<td></td>
<td>PHYS 3100 (or PHYS 3070)</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 3800</td>
<td></td>
<td></td>
<td>PHYS 3110 or (PHYS 3070)</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 3900</td>
<td></td>
<td></td>
<td>PHYS 3110 (or PHYS 3070) and consent of instructor</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 4850 or PHYS 4860 and consent of department chair</td>
<td>PHYS 4850</td>
<td></td>
<td>Consent of instructor</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 4900</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 25

Major/concentration requirements are continued on the next page.
### Concentration (included in major GPA; 2.0 or better)

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Prerequisites/Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 3150</td>
<td>Fall only</td>
<td></td>
<td>PHYS 3150: PHYS 2021 or 2121 and MATH 1920 with a minimum grade of C, MATH 3110: MATH 1920 MATH 3120: MATH 1920 with a minimum grade of C</td>
<td>3 or 4</td>
</tr>
<tr>
<td>MATH 3110</td>
<td></td>
<td></td>
<td>MATH 1730 with a grade of C or better, Math ACT of 26 or better, or Calculus placement test score of 73 or better</td>
<td>4</td>
</tr>
<tr>
<td>MATH 3120</td>
<td></td>
<td></td>
<td>MATH 1730 with a grade of C or better, Math ACT of 26 or better, or Calculus placement test score of 73 or better</td>
<td>4</td>
</tr>
</tbody>
</table>

### Supporting (excluded from major GPA)

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Prerequisites/Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1910</td>
<td></td>
<td></td>
<td>MATH 1730 with a grade of C or better, Math ACT of 26 or better, or Calculus placement test score of 73 or better</td>
<td>4</td>
</tr>
<tr>
<td>MATH 1920</td>
<td></td>
<td></td>
<td>MATH 1910 with a minimum grade of C</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1110/1111</td>
<td></td>
<td></td>
<td>High school chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1120/1121</td>
<td></td>
<td></td>
<td>CHEM 1110/1111 with a minimum grade of C-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total:** 16

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**Note:** At least 18 credits of elective hours must be upper division (3000/4000 level).

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### Minor (Minor is Optional)

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

**Total:**

---

**Signed:**

**Minor Advisor (if applicable):**

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1. Degrees require a minimum of 120 semester hours (12 of the last 18 at MTSU) with a 2.0 GPA, a minimum of 42 upper-division hours (30 at MTSU) with a 2.0 GPA, and a minimum of 60 senior college hours.

2. Learning Support courses do not count toward the 120-hour requirement or cumulative degree GPA.

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**Signed:**

**Physics Advisor:**

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Revised 3.6.2018
## Cognate Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
<th>Hours</th>
<th>Course</th>
<th>Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 3000</td>
<td>Acoustics and Signal Analysis</td>
<td>3</td>
<td>PHYS 3600</td>
<td>Radiation Oncology Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3150/3160</td>
<td>Topics and Methods of Theoretical Physics I / II</td>
<td>3</td>
<td>PHYS 4310/4320</td>
<td>Electricity and Magnetism I / II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3200</td>
<td>Scientific Modeling</td>
<td>2</td>
<td>PHYS 4380/4390</td>
<td>Quantum Mechanics I / II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3300</td>
<td>Classical Mechanics</td>
<td>3</td>
<td>ASTR 3400</td>
<td>Fundamentals of Astrophysics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 3310/3350</td>
<td>Digital or Analog Electronics</td>
<td>3 or 4</td>
<td>ASTR 3401</td>
<td>Experimental Astronomy</td>
<td>1</td>
</tr>
</tbody>
</table>

### Advanced Physics or Astronomy

Any upper division PHYS or ASTR, including:

- PHYS 3000: Acoustics and Signal Analysis
  - Hours: 3
- PHYS 3150/3160: Topics and Methods of Theoretical Physics I / II
  - Hours: 3
- PHYS 3200: Scientific Modeling
  - Hours: 2
- PHYS 3300: Classical Mechanics
  - Hours: 3
- PHYS 3310/3350: Digital or Analog Electronics
  - Hours: 3 or 4

### Computer Applications

- INFS 2400: Web Development
  - Hours: 3
- INFS 3100: Principles of Management Information Systems
  - Hours: 3
- INFS 3200: Business Application Development
  - Hours: 3
- INFS 3400: Object Oriented Programming with C#.NET
  - Hours: 3
- INFS 4300: Security Assurance for Information Systems Audit
  - Hours: 3
- INFS 4790: Database Design and Development
  - Hours: 3

### Computational Methods

- CSCI 2170: Computer Science II
  - Hours: 4
- CSCI 3037: Computer Languages: Visual Programming
  - Hours: 3
- CSCI 3160: Introduction to Assembly Language
  - Hours: 3
- CSCI 3180: Introduction to Numerical Analysis
  - Hours: 3
- CSCI 3250: Operating Systems
  - Hours: 3
- CSCI 4330: Parallel Processing Concepts
  - Hours: 3

### Technology

- ET 1210: Introduction to Metals and Metallurgy
  - Hours: 3
- ET 2310: Computer-Assisted Drafting and Design I
  - Hours: 3
- ET 3210: Machine Tool Technology
  - Hours: 3
- ET 3360: Computer-Assisted Drafting and Design II
  - Hours: 3
- ET 4440: Fire Safety
  - Hours: 3
- ET 4630: Local Area Networks
  - Hours: 3

### Operations Research

- QM 2610: Statistical Methods I
  - Hours: 3
- QM 3620: Statistical Methods II
  - Hours: 3
- MGMT 3620: Operations Management
  - Hours: 3
- QM 4010: Decision Science Techniques
  - Hours: 3
- BCEN 4670: International Business Communication
  - Hours: 3

### Actuarial

- STAT 3150: Mathematical Statistics I
  - Hours: 3
- STAT 4190: Mathematical Statistics II
  - Hours: 3
- ACSI/MATH 4140: Mathematical Foundations of Actuarial Science
  - Hours: 3
- ACSI/MATH 4200: Introduction to Mathematics of Investment
  - Hours: 3
- ACSI 4230: Mathematics of Compound Interest
  - Hours: 3

### Business Administration

- ACTG 3000: Survey of Accounting for General Business
  - Hours: 3
- FIN 3000 or 3010: Principles of Financial Management or Business Finance
  - Hours: 3
- BLAW 3400 or 3430: Legal Environment of Business or Commercial Law
  - Hours: 3
- MGMT 3610: Principles of Management
  - Hours: 3
- MKTG 3820: Principles of Marketing
  - Hours: 3

### Natural Science

- BIOL 1110/1: General Biology I/Lab
  - Hours: 4
- BIOL 1120/1: General Biology II/Lab
  - Hours: 4
- BIOL 2230: Microbiology
  - Hours: 4
- CHEM 3010/1: Organic Chemistry I/Lab
  - Hours: 4
- CHEM 3020/1: Organic Chemistry II/Lab
  - Hours: 4
- CHEM 3530/1: Principles of Biochemistry/Lab
  - Hours: 4

### Supplemental Mathematics

- MATH 2010: Elements of Linear Algebra
  - Hours: 3
- MATH 2050: Probability and Statistics
  - Hours: 3
- MATH 3260: Differential Equations II
  - Hours: 3
- MATH 3460: Foundations of Higher Mathematics
  - Hours: 3
- MATH 3070: College Geometry
  - Hours: 3

Revised 3.6.2018