## Computer Science, BS
### Big Data Concentration

**University of Wyoming, 2016-17**

### Freshman Fall Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>USP First-Year Seminar</td>
<td>3</td>
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</tr>
<tr>
<td>COSC 1010</td>
<td>4</td>
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<tr>
<td>MATH 2200</td>
<td>4</td>
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<td>Q</td>
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<tr>
<td>Science Series I ^ ***</td>
<td>4</td>
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<td>PN</td>
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**Credit hours subtotal:** 13

### Freshman Spring Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min</th>
<th>Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td>USP Communication I</td>
<td>3</td>
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<td>C1</td>
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<tr>
<td>COSC 1030</td>
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<td></td>
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<tr>
<td>MATH 2205</td>
<td>4</td>
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<td>Science Series II ^ ***</td>
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**Credit hours subtotal:** 13

### Sophomore Fall Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min</th>
<th>Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td>USP Communication 2</td>
<td>3</td>
<td></td>
<td>C</td>
<td>C2</td>
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<tr>
<td>COSC 2030</td>
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<tr>
<td>COSC 2150</td>
<td>3</td>
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<td>C</td>
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<tr>
<td>COSC 2300</td>
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<td>Cross listed with MATH 2300.</td>
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<tr>
<td>MATH 2250</td>
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**Credit hours subtotal:** 16

### Sophomore Spring Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min</th>
<th>Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td>USP Human Culture</td>
<td>3</td>
<td></td>
<td></td>
<td>H</td>
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<tr>
<td>COSC 3011</td>
<td>3</td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>COSC 3020</td>
<td>4</td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>STAT 4220</td>
<td>3</td>
<td></td>
<td>C</td>
<td>Can substitute STAT 2010 (Statistical Concepts), STAT 2050 (Fund of Statistics), or STAT 2070 (Intro Stats for the Social Sciences).</td>
</tr>
<tr>
<td>Science Elective I ^ ****</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Credit hours subtotal:** 17

This is a guide for course work in the major; actual course sequence may vary by student. Please refer to the online student degree evaluation, and consult with an academic advisor. • Not all courses are offered every semester and some electives may have prerequisites. Students should review the course descriptions in the University Catalog and consult with their academic advisor to plan accordingly.

### University of Wyoming requirements:
- Students must have a minimum cumulative GPA of 2.0 to graduate. • Students must complete 42 hours of upper division (3000-level or above) coursework, 30 of which must be from the University of Wyoming. • Courses must be taken for a letter grade unless offered only for S/U. • University Studies Program (USP) Human Culture (H) and Physical & Natural World (PN) courses must be taken outside of the major subject, but can be cross-listed with the major.

### College of Engineering and Applied Science requirements:
- Students must have a minimum cumulative GPA of 2.0 in all Engineering courses for graduation. • A grade of C or higher is required for all prerequisite courses. Students must also achieve a grade of C or better in all required mathematics courses.

### Computer Science—Big Data Concentration Program Notes:
- All computer science, math, and statistics courses must be completed with a grade of C or better. A grade of C- is not acceptable. • It is highly recommended that students selecting the big data concentration while majoring in computer science declare a minor in statistics since all course requirements will have been met.
- ^ Computer Science core courses.
### Computer Science, BS

**Big Data Concentration**

**University of Wyoming, 2016-17**

#### Junior Fall Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>USP US &amp; Wyoming Constitutions</td>
<td>3</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>COSC 4550 Introduction to Artificial Intelligence</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>STAT 3050 Statistical Methods</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Operating Systems Course *****</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Science Elective II ^ ****</td>
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Credit hours subtotal: 16

#### Junior Spring Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min Grade</th>
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</thead>
<tbody>
<tr>
<td>USP Human Culture</td>
<td>3</td>
<td>H</td>
<td></td>
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<tr>
<td>COSC 3050 Ethics for the Computer Professional</td>
<td>1</td>
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<tr>
<td>COSC 4570 Data Mining</td>
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<td>C</td>
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<tr>
<td>COSC 4820 Database Systems</td>
<td>3</td>
<td>C</td>
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<tr>
<td>STAT 4015 Regression Analysis</td>
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Credit hours subtotal: 11

#### Senior Fall Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Min Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td>COSC 4450 Computer Graphics</td>
<td>3</td>
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<tr>
<td>COSC 4555 Machine Learning</td>
<td>3</td>
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<tr>
<td>COSC 4950 Senior Design I ^</td>
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<tr>
<td>STAT 4045 Categorical Data Analysis</td>
<td>3</td>
<td>C</td>
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<tr>
<td>Computer Science Elective I *****</td>
<td>3</td>
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</table>

Application Area Course Prerequisite: May be needed depending upon application area course selected; consult with an academic advisor about options.

Credit hours subtotal: 16

#### Senior Spring Semester

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<th>Course</th>
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<th>Notes</th>
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<tbody>
<tr>
<td>USP Communication III</td>
<td>3</td>
<td>C</td>
<td>C3</td>
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<tr>
<td>COSC 4955 Senior Design II ^</td>
<td>2</td>
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<tr>
<td>STAT 4115 Time Series Analysis &amp; Forecasting</td>
<td>3</td>
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<tr>
<td>Application Area Course ******</td>
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<tr>
<td>Computer Science Elective II ******</td>
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</table>

Credit hours subtotal: 14

**TOTAL CREDIT HOURS:** 122

* Computer Science–Big Data Concentration Program Notes con't:
  * Requires MATH ACT ≥ 25, MATH SAT ≥ 600, Math Placement Exam ≥ 4, or ≥ C in MATH 1400 within one year prior to the start of the course. (University standard)
  ** Requires MATH ACT ≥ 27, MATH SAT ≥ 600, Math Placement Exam ≥ 5, or ≥ C in MATH 1405 or 1450. (University standard)

**Science Series I & II.** Students must complete two courses from a tightly-coupled series, each of which has a lab component and recommended for science or engineering majors. Be aware that the first course in each series has a Math Placement Exam or course prerequisite requirement; please consult the course descriptions in the *University Catalog* for specific information. Courses can be selected from:

- CHEM 1020 (General Chemistry I) & CHEM 1030 (General Chemistry II)
- CHEM 1050 (Advanced General Chemistry I) & CHEM 1060 (Advanced General Chemistry II)
- LIFE 1010 (General Biology I) & LIFE 2022 (Animal Biology) or LIFE 2023 (Biology of Plants & Fungi)
- PHYS 1110 (General Physics I) & PHYS 1120 (General Physics II)
- PHYS 1210 (Engineering Physics I) & PHYS 1220 (Engineering Physics II)
- PHYS 1310 (College Physics I - ) & PHYS 1320 (College Physics II)

*Continued on next page.*
Computer Science—Big Data Concentration Program Notes con't:

NOTE: The big data concentration requires the selection of an "application area" course (see page 3); the choice of series can effect the prerequisites needed for the course selected. Please consult the course descriptions in the University Catalog for specific information about course prerequisites and discuss with an academic advisor.

**** Science Electives. Please see the Computer Science Department web page www.uwyo.edu/cosc/undergraduate_students/cosc_degree/ for a current list of approved courses. These course selections must have a lab component and be recommended for science or engineering majors.

***** Operating Systems Course. Chose one (1) course from the following options:
- COSC 3750 Linux Programming for Systems Applications
- COSC 4740 Operating Systems Design
- COSC 4750 Systems Programming and Management

****** Computer Science Electives. A total of six (6) hours of upper division (3000-level or above) computer science electives are required. A maximum of three (3) hours of COSC 3970 (Internship) can be included in this requirement.

******* Application Area Course. Select one (1) course from the following options. Additional options may be available; please consult with an academic advisor or see the departmental web site for the most current list of approved courses.
- BOT 4550 Computational Biology
- CHEM 4560 Molecular Modeling - Computational Chemistry
- GEOG 4220 Spatial Modeling and Geocomputation
- MOLB 4495 Bioinformatics
- PHYS 4830 Mathematical and Computational Physics