

# Computer Science, BS

## Big Data Concentration



### University of Wyoming, 2016-17

Freshman Fall Semester			Hrs	Min	Grade	Notes
		USP First-Year Seminar	3		C	FY
COSC	1010	Introduction to Computer Science ^ *	4		C	
MATH	2200	Calculus I ^ **	4		C	Q
		Science Series I ^ ***	4			PN
Credit hours subtotal:			<b>15</b>			

Freshman Spring Semester			Hrs	Min	Grade	Notes
		USP Communication I	3		C	C1
COSC	1030	Computer Science I ^	4		C	
MATH	2205	Calculus II ^	4		C	
		Science Series II ^ ***	4			PN
Credit hours subtotal:			<b>15</b>			

Sophomore Fall Semester			Hrs	Min	Grade	Notes
		USP Communication 2	3		C	C2
COSC	2030	Computer Science II ^	4		C	
COSC	2150	Computer Organization ^	3		C	
COSC	2300	Discrete Structures ^	3		C	Cross listed with MATH 2300.
MATH	2250	Elementary Linear Algebra	3		C	
Credit hours subtotal:			<b>16</b>			

Sophomore Spring Semester			Hrs	Min	Grade	Notes
		USP Human Culture	3			H
COSC	3011	Introduction to Software Design ^	3		C	
COSC	3020	Algorithms and Data Structures ^	4		C	
STAT	4220	Basic Engineering Statistics ^	3		C	Can substitute STAT 2010 (Statistical Concepts), STAT 2050 (Fund of Statistics), or STAT 2070 (Intro Stats for the Social Sciences).
		Science Elective I ^ ****	4			
Credit hours subtotal:			<b>17</b>			

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.

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#### Junior Fall Semester

	Hrs	Min	Grade	Notes
USP US & Wyoming Constitutions	3		V	
COSC 4550 Introduction to Artificial Intelligence	3		C	
STAT 3050 Statistical Methods	3		C	
Operating Systems Course *****	3		C	
Science Elective II ^ ****	4			
Credit hours subtotal:	<b>16</b>			

#### Junior Spring Semester

	Hrs	Min	Grade	Notes
USP Human Culture	3		H	
COSC 3050 Ethics for the Computer Professional	1		C	
COSC 4570 Data Mining	3		C	
COSC 4820 Database Systems	3		C	
STAT 4015 Regression Analysis	3		C	
Credit hours subtotal:	<b>13</b>			

#### Senior Fall Semester

	Hrs	Min	Grade	Notes
COSC 4450 Computer Graphics	3		C	
COSC 4555 Machine Learning	3		C	
COSC 4950 Senior Design I ^	1		C	
STAT 4045 Categorical Data Analysis	3		C	
Computer Science Elective I *****	3		C	
Application Area Course Prerequisite	3			May be needed depending upon application area course selected; consult with an academic advisor about options.
Credit hours subtotal:	<b>16</b>			

#### Senior Spring Semester

	Hrs	Min	Grade	Notes
USP Communication III	3		C	C3
COSC 4955 Senior Design II ^	2		C	
STAT 4115 Time Series Analysis & Forecasting	3		C	
Application Area Course *****	3			
Computer Science Elective II *****	3		C	
Credit hours subtotal:	<b>14</b>			

**TOTAL CREDIT HOURS: 122**

#### Computer Science–Big Data Concentration Program Notes con't:

\* Requires MATH ACT  $\geq 25$ , MATH SAT  $\geq 600$ , Math Placement Exam  $\geq 4$ , or  $\geq C$  in MATH 1400 within one year prior to the start of the course. (University standard)

\*\* Requires MATH ACT  $\geq 27$ , MATH SAT  $\geq 600$ , Math Placement Exam  $\geq 5$ , or  $\geq C$  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) & PHSY 1120 (General Physics II)

PHYS 1210 (Engineering Physics I) & PHYS 1220 (Engineering Physics II)

PHYS 1310 (College Physics I - ) & PHYS 1320 (College Physics II)

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### 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/](http://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