

# MATHEMATICS: DATA SCIENCE, BS

## Degree Requirements

**Requirements for Students Matriculating in or before Academic Year 2024-2025.** Learn more about University Academic Regulation 3.1 (<http://catalog.okstate.edu/university-academic-regulations/#matriculation>).

**Minimum Overall Grade Point Average: 2.50**

**Total Hours: 120**

Code	Title	Hours
<b>General Education Requirements</b>		
<i>English Composition</i>		
See Academic Regulation 3.5 ( <a href="http://catalog.okstate.edu/university-academic-regulations/#english-composition">http://catalog.okstate.edu/university-academic-regulations/#english-composition</a> )		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
<i>American History &amp; Government</i>		
HIST 1103	Survey of American History	3
or HIST 1483	American History to 1865 (H)	
or HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
<i>Analytical &amp; Quantitative Thought (A)</i>		
MATH 2144	Calculus I (A) <sup>1</sup>	4
MATH 2153	Calculus II (A) <sup>1</sup>	3
CS 1113	Computer Science I (A) <sup>1</sup>	3
<i>Humanities (H)</i>		
Courses designated (H)		6
<i>Natural Sciences (N)</i>		
Must include one Laboratory Science (L) course		
PHYS 1114	College Physics I (LN) <sup>1</sup>	4
or PHYS 2014	University Physics I (LN)	
Course designated (N)		2
<i>Social &amp; Behavioral Sciences (S)</i>		
Course designated (S)		3
<i>Additional General Education</i>		
Courses designated (A), (H), (N), or (S)		3
<b>Hours Subtotal</b>		<b>40</b>
<b>Diversity (D) &amp; International Dimension (I)</b>		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
<b>College/Departmental Requirements</b>		
<i>First Year Seminar</i>		
(Transfer students with 15 hours exempt)		1
<i>Arts &amp; Humanities</i>		

See note 2.a.		3
<i>Natural &amp; Mathematical Sciences</i>		
MATH 2163	Calculus III	3
CS 2133	Computer Science II	3
STAT 4013	Statistical Methods I (A)	3
or STAT 4053	Statistical Methods I for the Social Sciences (A)	
See note 2.b.		
<i>Foreign Language</i>		
See note 3		
0-6 hours		
<i>Upper-Division General Education</i>		
Select 6 hours outside major department		
See note 2.c.		
<b>Hours Subtotal</b>		<b>13</b>
<b>Major Requirements</b>		
Minimum GPA of 2.50 and minimum grade of "C" or "P" required in each course in Major Requirements.		
<i>Foundation</i>		
MATH 2233	Differential Equations	3
MATH 3013	Linear Algebra (A)	3
MATH 3613	Introduction to Abstract Algebra	3
MATH 3583	Introduction to Mathematical Modeling	3
<i>Major core</i>		
MATH 4533	Matrix Methods in Machine Learning	3
MATH 4663	Combinatorics	3
STAT 4043	Applied Regression Analysis	3
STAT 4203	Mathematical Statistics I	3
6 hours from 4000-level MATH excluding 0-ending or thesis courses.		6
<i>Professional Requirements</i>		
CS 3353	Data Structures and Algorithm Analysis I	3
CS 4433	Introduction to Database Systems	3
Select 3 hours from the following:		3
CS 3443	Computer Systems	
CS 4523	Cloud Computing and Distributed Systems	
CS 4783	Machine Learning	
CS 4883	Social Issues in Computing	
Select 3 hours from the following:		3
CS 1103	Computer Programming (A)	
CS 2351	Unix Programming	
CS 2433	C/C++ Programming	
ENGR 1412	Introductory Engineering Computer Programming	
MSIS 2103	Business Data Science Technologies	
STAT 4091	Sas Programming	
STAT 4191	R Programming	
STAT 4193	SAS and R Programming	
Select 9 hours from the following:		9
Upper division CS		
4000-level MATH		
MSIS 3103	End User Database Systems Design and Management	
or MSIS 3333	Database Systems Development	

MSIS 3223	Principles of Data Analytics	
STAT 4023	Statistical Methods II	
STAT 4213	Mathematical Statistics II	
STAT 4463	Statistical Machine Learning with R	
STAT 4193	SAS and R Programming	
<b>Hours Subtotal</b>		<b>51</b>
<b>Electives</b>		
Select 16 hours		16
May need to include 6 hours of a foreign language. (see note 3.)		
May need to include 6 hours upper-division general education outside major department (see note 2.c.)		
MATH 1513 and MATH 1813 required for students who do not place directly into MATH 2144.		
<b>Hours Subtotal</b>		<b>16</b>
<b>Total Hours</b>		<b>120</b>

1

College and Departmental Requirements that may be used to meet General Education requirements.

## Other Requirements

- See the College of Arts and Sciences Requirements.
- **Upper-Division Credit:** Total hours must include at least 40 hours in courses numbered 3000 or above.

## College of Arts and Sciences Requirements

- Hours in One Department:** For B.A. and B.S. degrees, no more than 54 hours in one department may be required to meet degree requirements. Courses used to satisfy the General Education English Composition, U.S. History, American Government, and Mathematics or Statistics requirements will not count toward the 54-hour maximum required from one department.
- A&S College/Departmental Requirements**
  - Arts and Humanities are defined as any course carrying an (H) designation or courses from AMST, ART, DANC, ENGL (except ENGL 3323 Technical Writing) HIST, MUSI, PHIL (except PHIL 1313 Logic and Critical Thinking (A), PHIL 3003 Symbolic Logic (A) and PHIL 4003 Mathematical Logic and Computability), REL, TH, and foreign languages.
  - Natural and Mathematical Sciences are defined as any course from the following prefixes: ASTR, BIOC, BIOL, CHEM, CS (except CS 4883 Social Issues in Computing), GEOL, MATH, MICR, PBIO, PHYS, and STAT; or courses from other departments that carry an (A) or (N) general education designation.
  - Six upper-division hours are required from General Education or any CAS courses outside the student's major department (<http://catalog.okstate.edu/college-arts-sciences-major-departments/>). This requirement may be satisfied by courses also used to satisfy any part of a student's degree program (i.e., in General Education, College Departmental Requirements, Major Requirements or Electives).
  - Non-Western Studies Requirement for B.A. and B.F.A.; One course in Non-Western Studies (N.W.). This requirement may be satisfied by courses also used to satisfy any part of a student's degree program (i.e., in General Education, College Departmental Requirements, Major Requirements or Electives).

- The College of Arts & Sciences requires a minimum 2.0 GPA in all major requirements and a minimum 2.0 GPA in all major-prefix courses applied to the degree.

### 3. Foreign Language Proficiency

- The foreign language requirement for the B.A. may be satisfied by 9 hours college credit in the same language, which must include 3 hours at the 2000-level, or equivalent proficiency (e.g., passing an advanced standing examination; TOEFL exam; presenting a high school transcript which demonstrates the high school was primarily conducted in a language other than English; etc.). Computer Science courses may not be used to satisfy this requirement. Currently Arabic and Mvskoke are not offered at the 2000-level at OSU.
- The foreign language requirement for the B.S., B.M. and B.F.A. may be satisfied by presenting a high school transcript which demonstrates two years of study of a single foreign language (passing grades at second-year level of study). It may also be satisfied by 6 hours college credit in the same language, which must include language courses 1713 and 1813, or equivalent proficiency (e.g., passing an advanced standing examination; TOEFL exam; presenting a high school transcript which demonstrates the high school was primarily conducted in a language other than English; etc.). Computer Science courses may not be used to satisfy this requirement.
- In addition to a. and b., students pursuing teacher certification must meet novice-high foreign language proficiency by presenting a high school transcript which demonstrates two years of study of a single foreign language with no grade below B. Or, students may complete 3 hours college credit in a single language with no grade below C (or pass an advanced standing examination, College Level Examination Program (CLEP) exam, or Oral Proficiency Interview developed by the American Council on the Teaching of Foreign Languages, equivalent to 3 hours of college credit.) Or, students may meet the requirement by transfer of documentation of meeting the foreign language competency from one of the teacher education programs in the State of Oklahoma approved by the Oklahoma State Regents for Higher Education.
- Exclusions.** Courses with ATHL or LEIS prefixes and leisure activity courses may not be used for degree credit.

## Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2030.

## Example Plan of Study

### Finish in Four Plan of Study

The plan below is an **example** of how students can successfully complete degree requirements in four years. This suggested class schedule

plan may be used as a guide and can be adjusted based on individual needs. Students are required to meet with an academic advisor prior to enrollment each semester to plan their class schedule, and students are ultimately responsible for completing all degree requirements.

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
First Year Seminar		1
ENGL 1113	Composition I	3
MATH 2144	Calculus I (A)	4
CS 1113	Computer Science I (A)	3
General Education		3
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
ENGL 1213	Composition II	3
MATH 2153	Calculus II (A)	3
CS 2133	Computer Science II	3
General Education or Electives		6
<b>Hours</b>		<b>15</b>
<b>Sophomore</b>		
<b>Fall</b>		
MATH 2163	Calculus III	3
MATH 3013	Linear Algebra (A)	3
PHYS 1114 or PHYS 2014	College Physics I (LN) or University Physics I (LN)	4
General Education, College, Major, or Electives		6
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
PHYS 1214 or PHYS 2114	College Physics II (LN) or University Physics II (LN)	4
MATH 3013	Linear Algebra (A)	3
MATH 2233	Differential Equations	3
General Education, College, Major, or Electives		5
<b>Hours</b>		<b>15</b>
<b>Junior</b>		
<b>Fall</b>		
MATH 3583	Introduction to Mathematical Modeling	3
MATH 3613	Introduction to Abstract Algebra	3
STAT 4203	Mathematical Statistics I	3
General Education, College, Major, or Electives		6
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
MATH 4663	Combinatorics	3
General Education, College, Major, or Electives		12
<b>Hours</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
CS 3353	Data Structures and Algorithm Analysis I	3
General Education, College, Major, or Electives		12
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
CS 4433	Introduction to Database Systems	3
General Education, College, Major, or Electives		12
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>120</b>