Credits

ATMOSPHERIC AND OCEANIC SCIENCES,

REQUIREMENTS

UNIVERSITY GENERAL **EDUCATION REQUIREMENTS**

All undergraduate students at the University of Wisconsin-Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/ #requirementsforundergraduatestudytext) section of the Guide.

General Education

- Breadth-Humanities/Literature/Arts: 6 credits
- Breadth-Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- · Breadth-Social Studies: 3 credits
- · Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *
- * The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS **& SCIENCE DEGREE** REQUIREMENTS: BACHELOR OF ARTS (B.A.)

Students pursuing a bachelor of arts degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum.

BACHELOR OF ARTS DEGREE REQUIREMENTS

Mathematics Complete the University General Education Requirements for Quantitative Reasoning A (QR-A) and Quantitative Reasoning B (QR-B) coursework.

Foreign Language

- · Complete the fourth unit of a foreign language; OR
- · Complete the third unit of a foreign language and the second unit of an additional foreign language.

L&S Breadth

- 12 credits of Humanities, which must include 6 credits of literature; and
- · 12 credits of Social Science; and
- 12 credits of Natural Science, which must include one 3+ credit Biological Science course and one 3+ credit Physical Science course.

Liberal Arts Complete at least 108 credits. and Science Coursework Depth of Complete at least 60 credits at the intermediate or Intermediate/ advanced level. Advanced work Major Declare and complete at least one major. Total Credits Complete at least 120 credits. UW-Madison · 30 credits in residence, overall; and Experience · 30 credits in residence after the 86th credit. Quality of • 2.000 in all coursework at UW-Madison Work · 2.000 in Intermediate/Advanced level coursework at UW-Madison

NON-L&S STUDENTS PURSUING AN L&S **MAJOR**

Non-L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

Title

Code

Calculus (complete	all):						
MATH 221	Calculus and Analytic Geometry 1	5					
MATH 222	Calculus and Analytic Geometry 2	4					
MATH 234	CalculusFunctions of Several Variables	4					
Physics (complete one course from each group):							
PHYSICS 207	General Physics	5					
or PHYSICS 201	General Physics						
or PHYSICS 247	A Modern Introduction to Physics						
PHYSICS 208	General Physics	5					
or PHYSICS 202	General Physics						
or PHYSICS 248	A Modern Introduction to Physics						
Computer Sciences (complete one):							
COMP SCI 220	Data Science Programming I						
COMP SCI 310	Problem Solving Using Computers						
COMP SCI 320	Data Science Programming II						
COMP SCI/ E C E 354	Machine Organization and Programming						
COMP SCI 412	Introduction to Numerical Methods						
COMP SCI/I SY E/	Introduction to Combinatorial						
MATH 425	Optimization						
Total Credits	:	26					

Core Sequence (complete all): ATM OCN 310 Dynamics of the Atmosphere and Ocean I ATM OCN 330 Dynamics of the Atmosphere and Ocean I ATM OCN 330 Physics of the Atmosphere and Ocean I ATM OCN 330 Physics of the Atmosphere and Ocean I ATM OCN 340 Physics of the Atmosphere and Ocean I ATM 151 Physics of the Atmosphere and Ocean I ATM 1521 Physics of the Atmosphere and Ocean I ATM 1521 Physics of the Atmosphere and Ocean I ATM 1522 Physics of the Atmosphere and Ocean I ATM 1523 Physics of the Atmosphere and Ocean I ATM 1524 Physics of the Atmosphere and Ocean I ATM 1525 Physics of the Atmosphere and Ocean I ATM 1526 Physics of the Atmosphere and Ocean I ATM 1527 Physics of the Atmosphere and Ocean I ATM 1528 Physics of the Atmosphere and Ocean I ATM 1529 Physics of the Atmosphere and Ocean I ATM 1520 Physics of the Atmosphere and Ocean I ATM 1521 Physics of the Atmosphere and Ocean I ATM 1521 Physi		ode	Title	Credits	MATH/ HIST SCI 473	History of Mathematics
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Probability MATH/ Introduction to Cryptography MATH/STAT 632 Processes STAT/MATH 309 Introduction to Probability and Mathematical Statistics I STAT/MATH 310 Introduction to Probability and Mathematical Statistics I STAT/MATH 310 Introduction to Probability and Mathematical Statistics I STAT/MATH 310 Introduction to Probability and Mathematical Statistics II STAT 311 Introduction to Theory and Methods of Mathematical Statistics I MATH 467 Introduction to Number Theory MATH/ Mathematics for Secondary School MATH/ Mathematical Statistics II		ISY E 425	·		MATH 629	
MATH/ COMP SCI/ E C E 435 MATH 441 Introduction to Modern Algebra MATH 443 Applied Linear Algebra MATH 461 College Geometry I MATH 467 Introduction to Number Theory MATH/ Mathematics for Secondary School STAT/MATH 309 Introduction to Probability and Mathematical Statistics I STAT/MATH 310 Introduction to Probability and Mathematical Statistics II STAT 311 Introduction to Theory and Methods of Mathematical Statistics I STAT 312 Introduction to Theory and Methods of Mathematical Statistics II			Probability			
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MATH 443 Applied Linear Algebra MATH 461 College Geometry I MATH 467 Introduction to Number Theory MATH/ Mathematics for Secondary School Mathematical Statistics II STAT 311 Introduction to Theory and Methods of Mathematical Statistics I STAT 312 Introduction to Theory and Methods of Mathematical Statistics II			Introduction to Modern Algebra		STAT/MATH 310	Introduction to Probability and
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MATH/ Mathematics for Secondary School of Mathematical Statistics II					CTAT 212	
		MATH/	Mathematics for Secondary School		SIAI SIZ	

STAT 324	1	Introductory Applied Statistics for
		Engineers
STAT 327		Learning a Statistical Language
STAT 333	-	Applied Regression Analysis
STAT 340		Data Science Modeling II
STAT 349		Introduction to Time Series
STAT 351		Introductory Nonparametric Statistics
STAT 360)	Topics in Statistics Study Abroad
STAT 371		Introductory Applied Statistics for
31/11/3/1		the Life Sciences
STAT 411		An Introduction to Sample Survey
		Theory and Methods
STAT 421		Applied Categorical Data Analysis
STAT/M E	E 424	Statistical Experimental Design
STAT/MA	TH 431	Introduction to the Theory of Probability
STAT 456	5	Applied Multivariate Analysis
STAT 461		Financial Statistics
STAT/		Introduction to Computational
COMP S		Statistics
STAT/CO MATH 47	,	Introduction to Combinatorics
STAT 479)	Special Topics in Statistics
STAT/CO		Linear Optimization
STAT/B N	/II 541	Introduction to Biostatistics
STAT/B N	/II 542	Introduction to Clinical Trials I
STAT/F&I		Statistical Methods for Bioscience I
STAT/F&N	,	Statistical Methods for Bioscience II
STAT 575	5	Statistical Methods for Spatial Data
STAT 601		Statistical Methods I
STAT 602	2	Statistical Methods II
STAT 605	5	Data Science Computing Project
STAT 609	9	Mathematical Statistics I
STAT 610)	Introduction to Statistical Inference
STAT 615		Statistical Learning
STAT 627	7	Professional Skills in Data Science
STAT 628		Data Science Practicum
STAT/I SY MATH/O	,	Introduction to Stochastic Processes
STAT/B N	4T 641	Statistical Methods for Clinical Trials
STAT/B N	/II 642	Statistical Methods for Epidemiology
STAT 679)	Special Topics in Statistics
STAT 681		Senior Honors Thesis
STAT 682	2	Senior Honors Thesis
Capstone		
ATM OCN 4	105	AOS Senior Capstone Seminar
Electives		11
ATM OCI		Topics in Meteorology
ATM OCI	N 404	Meteorological Measurements

Te	otal Credits		27
	ATM OCN 699	Directed Study ²	
	ATM OCN 698	Directed Study ²	
	ATM OCN 692	Senior Thesis	
	ATM OCN 691	Senior Thesis	
	ATM OCN 682	Senior Honors Thesis	
	ATM OCN 681	Senior Honors Thesis	
	ATM OCN 660	Introduction to Physical Oceanography	
	ATM OCN 651	Synoptic-Dynamic Laboratory	
	ATM OCN 640	Radiation in the Atmosphere and Ocean	
	ATM OCN 638	Atmospheric Chemistry	
	ATM OCN 637	Cloud Physics	
	ATM OCN 630	Introduction to Atmospheric and Oceanic Physics	
	ATM OCN 615	Laboratory in Rotating Fluid Dynamics	
	ATM OCN 611	Geophysical Fluid Dynamics II	
	ATM OCN 610	Geophysical Fluid Dynamics I	
	ATM OCN 575	Climatological Analysis	
	ATM OCN 573	Computational Methods in Atmospheric and Oceanic Sciences	
	ATM OCN/ ENVIR ST 535	Atmospheric Dispersion and Air Pollution	
	ATM OCN/ AGRONOMY/ SOIL SCI 532	Environmental Biophysics	
	ATM OCN/ ENVIR ST/ GEOG 528	Past Climates and Climatic Change	
	ATM OCN/ ENVIR ST 520 ATM OCN 522	Bioclimatology Tropical Meteorology	
	ATM OCN 453	Synoptic Laboratory II: Mesoscale Meteorology	
	ATM OCN 452	Synoptic Laboratory I: The Frontal Cyclone	
	ATM OCN 441	Radar and Satellite Meteorology	
	ATM OCN 425	Global Climate Processes	

RESIDENCE AND QUALITY OF WORK

- 2.000 GPA in all ATM OCN and major courses
- 2.000 GPA on 15 upper-level credits in the major, taken in Residence. $^{\rm 3}$
- 15 credits in ATM OCN, taken on campus

HONORS IN THE MAJOR

Students may declare Honors in the Atmospheric and Oceanic Sciences Major in consultation with the Atmospheric and Oceanic Sciences undergraduate advisor.

REQUIREMENTS

To earn Honors in the Major in Atmospheric and Oceanic Sciences, students must satisfy both the requirements for the major (above) and the following additional requirements:

- Earn a 3.300 University GPA
- Earn a 3.400 GPA for all ATM OCN courses, and all courses accepted in the major
- · Complete the following additional coursework:
 - ATM OCN 610 or ATM OCN 611 and
 - ATM OCN 681 and ATM OCN 682 for a total of 6 credits

FOOTNOTES

Note that core sequence begins in the fall semester only.

A maximum 2 credits of Electives may come from Internship or Directed Study courses.

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ATM OCN 300 through ATM OCN 699 are upper-level in the major.

UNIVERSITY DEGREE **REQUIREMENTS**

Total Degree To receive a bachelor's degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency

Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.

Quality of Work

Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.