



## Potential Technical Electives for Climate & Space Undergraduates \*

### All Degrees and Concentrations

Course	Title	Credits
Math 371 or 471	Numerical Methods for Engineers & Scientists/Introduction to Numerical Methods	3-4
Stats 426	Introduction to Theoretical Statistics (pre-requisite is cross-listed class Stats/Math 425)	3

### Climate and Meteorology Degree

#### Climate Science and Impacts Concentration

Course	Title	Credits
Climate/Space 381	Undergrad Research Experience	1-4
Climate/Space 401	Geophysical Fluid Dynamics	4
Climate 411	Cloud & Precipitation	3
Climate 414	Weather Systems	3
Climate 420	Undergrad Research Experience	1-4
Climate 421	Introduction of Physical Oceanography	3
Climate 422	Boundary Layer Meteorology	4
Climate 440	Meteorological Analysis Laboratory	4
Climate 451	Atmospheric Dynamics I	4
Climate/Space 462	Instrumentation for Atmospheric and Space Sciences	4
Climate 463	Air Pollution Meteorology	3
Climate 473	Climate Physics	3
Climate 474	Ice Sheets, Glaciers, and Climate	3
Climate 475	Earth System Interactions	4
Climate 479	Atmospheric Chemistry	4
Climate 480	Climate Change: Move to Action	3
Space 495	Upper Atmosphere and Ionosphere	4
Climate/Space 499	Directed Study for Undergraduate Students	1-3
Climate 530	Using Climate-Change Knowledge in Planning and Design (Senior)	1-2
Climate/Space 532	Radiative Transfer I (instructor permission required)	3
Climate 578	Air Pollution Chemistry (enforced pre-reqs)	3
Space 584	Instrumentation and Analysis Techniques	4
Climate/Space 585	Introduction to Remote Sensing and Inverse Theory	3
Climate 587	Microwave Remote Sensing 1: Radiometry (instructor permission required)	3
Arch/Up 357	Architecture, Sustainability, and the City, Ideas, Forces, and People Shaping the Built Environment	3
CEE 230	Energy and Environment	3
CEE 265	Sustainable Engineering Principles	3
CEE 307	Sustainable Cities	3
CEE 565	Seminars on Energy Science, Technology, & Policy	3



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CEE/CHE 686	Case Studies in Environmental Sustainability	3
Earth 325/Environ 325	Environmental Geochemistry	3
Earth 331/Environ 321	Climate and Climate Change	4
Earth 422	Principles of Geochemistry	3
EECS 280	Programming and Introductory Data Structures	4
EECS 281	Data Structures and Algorithms	4
EECS 381	Object Oriented and Advanced Programming	4
EECS 402	Computer Programming for Scientists and Engineers	3
EECS 477	Introduction to Algorithms	4
ENGR 301	Engineering Undergraduate Study Abroad	1-16
ENGR 405/CHE 405	Problem Solving and Troubleshooting in the Workplace	3
ENGR 450	Multidisciplinary Design	4
ENGR 455	Multidisciplinary Engineering Design II	1-5
ENGR 456	Mentorship-Leadership in Multidisciplinary Design	1-3
ENGR 521	Clean Tech Entrepreneurship	3
Environ 302**	Topics in Environmental Social Science	4
Environ 303**	Topics in Environmental Natural	3
Environ 312 / Polsci 380	Environmental Politics and Policy	3
Environ 320	Environmental Journalism: Reporting About Science Policy and Public Health	3
Environ 365	International Environmental Policy	3
Environ 367	Global Enterprise & Sustainable Development	3
Environ 412	Environmental Values in Public Policy	3
ESENG 567	Energy Infrastructure Systems	3
IOE 265	Probability and Statistics for Engineers	4
IOE 366	Linear Statistical Models	2
Math 354	Fourier Analysis and its Applications	3
Math 371/ENGR 371	Numerical Methods for Engineers and Scientists	3
Math 404	Intermediate Differential Equations and Dynamics	3
Math 412	Introduction to Modern Algebra	3
Math 417	Matrix Algebra I	3
Math 419	Linear Spaces and Matrix Theory	3
Math 420	Matrix Algebra II	3
Math 425/Stats 425	Introduction to Probability	3
Math 450	Advanced Mathematics for Engineers I	4
Math 454	Boundary Value Problems for Partial Differential Equations	3
Math 471	Introduction to Numerical Methods	3
MECHENG 320	Fluid Mechanics I	3
MECHENG 335	Heat Transfer	3
MECHENG 336	Thermodynamics II	3
MECHENG 420	Fluid Mechanics II	3
NRE 475	Environmental Law	3
NRE 574	Sustainable Energy Systems	3



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EARTH 421	Principles of Physical Oceanography	3
PHYSICS 481	Science Technology and Public Policy	3
STATS 250	Introduction to Statistics and Data Analysis	4
STATS 280	Honors Introduction to Statistics and Data Analysis	4
STATS 401	Applied Statistical Methods II	4
STATS 403	Introduction to Quantitative Research Methods	4
STATS 406	Introduction to Statistical Computing	4
STATS 412	Introduction to Probability and Statistics	3
STATS 415	Data Mining and Statistical Learning	4
STATS 480	Survey Sampling Techniques	4
TechComm 401	Special Topics Strategic Planning & Proposal Writing	4
TechComm 450	Web Page and Site Design	4
TechComm 498	Technical and Professional Writing for Industry Government and Business	3

**Climate and Meteorology Degree**

**Meteorology Concentration**

Course	Title	Credits
Climate 441	Mountain Meteorology & Climate of the Rockies (at UM Camp Davis)	3
Climate/Space 450	Geophysical Electromagnetics	4
Climate 463	Air Pollution Meteorology	3
Climate 467	Biogeochemical Cycles	3
Climate 479	Atmospheric Chemistry	3
Climate/Space 499	Directed study, research project with faculty member	1-4
Climate/Space 605	Current topics, check each term	
ENGR 450	Multidisciplinary Design	4
GEOSCI 325	Environmental Geochemistry	3
GEOSCI 420	Introductory Earth Physics	3
GEOSCI 421	Principles of Physical Oceanography	3
GEOSCI 422	Principles of Geochemistry	3
GEOSCI 442	Earth Surface Processes and Soils	4
STATS/MATH 425	Introduction to Probability	3
MATH 450	Advanced Mathematics for Engineers	4
STATS 412	Introduction to Probability	3



## Potential Technical Electives for Climate & Space Undergraduates \*

### Space Sciences and Engineering Degree

#### Space Science and Space Instrumentation Concentrations

Course	Title	Credits
AEROSP 305	Aerospace Engineering Laboratory I	4
AEROSP 335	Aircraft and Spacecraft Propulsion	4
AEROSP 347	Space Flight Mechanics	3
AEROSP 405	Aerospace Laboratory II	4
AEROSP 483	Space System Design	4
CEE 211	Statics and Dynamics	4
CEE 212	Solid and Structural Mechanics	4
CEE 265	Sustainable Engineering Principles	3
CEE 303	Computational Methods for Engineers and Scientists	4
CEE 325	Fluid Mechanics	4
EECS 230	Electromagnetics I	4
EECS 280	Programming and Introductory Data Structures	4
EECS 311	Electronic Circuits	4
EECS 314	Electrical Circuits Systems and Applications	4
EECS 330	Electromagnetics II	4
EECS 334	Principles of Optics	4
EECS 381	Object Oriented and Advanced Programming	4
EECS 402	Computer Programming For Scientists and Engineers	3
EECS 430	Radiowave Propagation and Link Design	4
EECS 461	Embedded Control Systems	4
EECS 477	Introduction to Algorithms	4
EECS 492	Introduction to Artificial Intelligence	4
ENGR 280	Undergraduate Research	1-4
ENGR 301	Engineering Undergraduate Study Abroad	1-16
ENGR 354	Engineering Design Practice	1
ENGR 355	Multidisciplinary Engineering Design I	1-4
ENGR 371/MATH 371	Numerical Methods for Engineers and Scientists	3
ENGR 391	Directed Overseas Study	1-3
ENGR 403	Scientific Visualization	3
ENGR 405/CHE 405	Problem Solving and Troubleshooting in the Workplace	3
ENGR 450	Multidisciplinary Design	4
ENGR 455	Multidisciplinary Engineering Design II	1-5
ENGR 456	Mentorship-Leadership in Multidisciplinary Design	1-3
IOE 265	Probability and Statistics for Engineers	4
IOE 366	Linear Statistical Models	2
IOE 373	Data Processing	4
IOE 465	Design and Analysis of Experiments	3
MATSCIE 330	Thermodynamics of Materials	4
MECHENG 235	Thermodynamics	3
MECHENG 250	Design and Manufacturing I	4



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MECHENG 305	Introduction to Finite Elements in Mechanical Engineering	3
MECHENG 320	Fluid Mechanics I	3
MECHENG 335	Heat Transfer	3
MECHENG 336	Thermodynamics II	3
MECHENG 350	Design and Manufacturing II	4
MECHENG 420	Fluid Mechanics II	3
NERS 250	Fundamentals of Nuclear Engineering and Radiological Sciences	4
NERS 311	Elements of Nuclear Engineering and Radiological Sciences I	3
NERS 312	Elements of Nuclear Engineering and Radiological Sciences II	3
NERS 472	Fusion Reactor Technology	3
TechComm 300	Technical Communication for Electrical and Computer Science	1
TechComm 401	Special Topics Strategic Planning & Proposal Writing	4
TechComm 450	Web Page and Site Design	4
TechComm 499	Scientific and Technical Communication elective credit only	
MATH 289	Problem Seminar	1
MATH 316	Differential Equations	3
MATH 351	Principles of Analysis	3
MATH 354	Fourier Analysis and its Applications	3
MATH 371	Numerical Methods for Engineers and Scientists	3
MATH 404	Intermediate Differential Equations and Dynamics	3
MATH 416	Theory of Algorithms	3
MATH 417	Matrix Algebra I	3
MATH 419	Linear Spaces and Matrix Theory	3
MATH 425	Introduction to Probability	3
MATH 450	Advanced Mathematics for Engineers I	4
MATH 454	Boundary Value Problems for Partial Differential Equations	3
MATH 471	Introduction to Numerical Methods	3
PHYSICS 390	Introduction to Modern Physics	3
PHYSICS 401	Intermediate Mechanics	3
PHYSICS 402	Optics	3
PHYSICS 405	Intermediate Electricity and Magnetism	3
PHYSICS 406	Statistical and Thermal Physics	3
PHYSICS 411	Introduction to Computational Physics	3
PHYSICS 413	Introduction to Nonlinear Dynamics and the Physics of Complexity	3
PHYSICS 453	Quantum Mechanics	3
PHYSICS 460	Quantum Mechanics II	3
STATS 250	Introduction to Statistics and Data Analysis	4
STATS 280	Honor Introduction to Statistics & Data Analysis	4
STATS 401	Applied Statistical Methods II	4
STATS 403	Introduction to Quantitative Research Methods	4
STATS 406	Introduction to Statistical Computing	4
STATS 412	Introduction to Probability and Statistics	3
STATS 415	Data Mining and Statistical Learning	4
STATS 425	Introduction to Probability	3



**Potential Technical Electives for Climate & Space Undergraduates \***

STATS 470	Introduction to the Design of Experiments	4
STATS 480	Survey Sampling Techniques	4

\* Other courses are possible, please see your advisor for approval.

\*\* Topic often changes; check with advisor if current topic is relevant.