EARTH AND SPACE SCIENCE (BS) - SECONDARY **EDUCATION TRACK**

Program Overview

Earth and Space Science is an interdisciplinary field which works to advance humanity's understanding of the Earth and the wider universe. Students are provided with a solid foundation in earth systems and processes (geosphere, hydrosphere, atmosphere, and biosphere)

and the impacts humans have on these systems, both past and present. Additionally, students will learn about the origins of the planets and the exploration of the solar system. All four tracks in ESS combine classroom, laboratory, and field experiences, as well as provide opportunities for mentored research projects and hands-on learning experiences.

Science teachers are in high demand across the state of Georgia, and across the US. The Muscogee County School District (Columbus, GA) currently guarantees graduates who complete certification requirements that they will have a job with the school district upon graduation. Our graduates have strong enough content knowledge to teach in most science classrooms, or to continue on towards graduate school or industry jobs. UTeach Columbus is an innovative program that prepares students for an exciting career in mathematics or science. Upon completion of the program, students will earn a degree in earth and space science, and be gualified to teach in a middle school or high school after passing the appropriate state certification examinations. Students completing this program are highly gualified for jobs utilizing their science knowledge, or for either informal education jobs or for work in a K-12 school setting. UTeach Columbus also provides close mentoring by Master Teachers, as well as having a dedicated advisor.

More information about UTeach Columbus can be obtained by calling 706-507-8612 or by visiting our website at http://uteach.columbusstate.edu/index.php (http:// uteach.columbusstate.edu/).

All educator preparation programs are approved by the Georgia Professional Standards Commission. In addition to the degree requirements, there are further requirements for teaching certification. Visit the Certification page (https://cgtl.columbusstate.edu/ certification.php) on the CSU Center for Quality Teaching and Learning (CQTL) website for detailed information about certification requirements and the certification process.

Career Opportunities

- middle or high school science teacher
- · education outreach at science museums, national parks
- · work with geology or environmental science consulting firms

Program of Study

Code	litle	Credit Hours
Core IMPACTS Ar	ea : Institutional Priorities ¹	4-5
COMM 1110	Public Speaking	3
ITDS 1779	Scholarship Across the Disciplines	2
LEAD 1705	Introduction to Servant Leadership	2

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PERS 1506	Perspectives 1-hour	1
PERS 1507	Perspectives 2-hour	2
1 2110 1001	e Course Options	2
	REN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT,	
	002, 2001, 2002	
SWAH 1001	Elementary Swahili I	
SWAH 1002	Elementary Swahili II	
Core IMPACTS A	rea : Mathematics & Quantitative Skills ¹	3-7
DATA 1501	Introduction to Data Science	3
MATH 1001	Quantitative Skills and Reasoning	3
MATH 1101	Introduction to Mathematical Modeling	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
MATH 1125	Applied Calculus	3
MATH 1131	Calculus with Analytic Geometry I	4
MATH 1132	Calculus with Analytic Geometry II	4
MATH 1165	Computer-Assisted Problem Solving	3
MATH 1401	Introduction to Statistics	3
MATH 1501	Calculus I	4
MATH 2125	Introduction to Discrete Mathematics	3
STAT 1401	Elementary Statistics	3
Core IMPACTS A	rea : Political Science and U.S. History	6
HIST 2111	U. S. History to 1865	3
or HIST 2112	U. S. History since 1865	
POLS 1101	American Government	3
Core IMPACTS A	rea : Arts, Humanities, and Ethics	6
Select one Fine A	arts course	3
ARTH 1100	Art Appreciation	
ARTH 2125	Introduction to the History of Art I– Prehistoric through Gothic	
ARTH 2126	Introduction to the History of Art II– Renaissance through Modern	
MUSC 1100	Music Appreciation	
THEA 1100	Theatre Appreciation	
ITDS 1145	Comparative Arts ²	
Select one Huma	nities course	3
ENGL 2111	World Literature I	
ENGL 2112	World Literature II	
ITDS 1774	Introduction to Digital Humanities	
PHIL 2010	Introduction to Philosophy	
ITDS 1145	Comparative Arts ²	
Core IMPACTS A	rea : Communicating in Writing	6
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Core IMPACTS A	rea : Technology, Mathematics, and Sciences ¹	7-11
ANTH 1145	Human Origins	3
ASTR 1105	Descriptive Astronomy: The Solar System	3
ASTR 1106	Descriptive Astronomy: Stars and Galaxies	3
ASTR 1305	Descriptive Astronomy Lab	1
ATSC 1112	Understanding the Weather	3
ATSC 1112L	Understanding the Weather Lab	1
BIOL 1125	Contemporary Issues in Biology Non-Lab	3
BIOL 1215K	Introductory Biology	4

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Core IMPACTS Total Hours 42			
		-	46
Health and Wellness 3			
	Health and Welli	less	3

KINS 1106	Lifetime Wellness	2
or PHED 1205	Concepts of Fitness	
Select one PEDS descriptions/ped	course (https://catalog.columbusstate.edu/course- s/#peds)	
Quantitative Sk must add to 18 ² ITDS 1145 Com	ed in the Institutional Priorities; Mathematics & ills; and Technology, Mathematics, and Sciences area credit hours. parative Arts, though listed under both Fine Arts and y be taken only once.	S

Major Requirements

Code	Title	Credit Hours
Core Requiremen	its	
Complete the cor	e requirements for this program	45
Core Total		45
Field of Study Re	quirements	
Minimum grade o	of C is required	
ASTR 1105	Descriptive Astronomy: The Solar System	3
ATSC 1112	Understanding the Weather	3
ENVS 1205K	Sustainability and the Environment	4
GEOL 1121	Introductory Geoscience I: Physical Geology	3
GEOL 1121L	Introductory Geoscience I: Physical Geology Lab	1
Select one of the	following sequences:	4
Sequence 1:		
PHYS 1111	Introductory Physics I	
PHYS 1311	Introductory Physics I Lab	
Sequence 2:		
PHYS 2211	Principles of Physics I	
PHYS 2311	Principles of Physics I Lab	
Field of Study Re	quirements Total	18
Required for the	Major	
Minimum grade o	of C is required.	
ATSC 5117U	Global and Climate Change	3
GEOL 1122	Introductory Geo-sciences II: Historical Geology	3
Choose one follo	wing sequences:	4
Sequence 1:		
PHYS 1112	Introductory Physics II	
PHYS 1312	Introductory Physics II Lab	
Sequence 2:		
PHYS 2212	Principles of Physics II	
PHYS 2312	Principles of Physics II Lab	
Choose one of th	e following ASTR courses:	3
ASTR 3105	Physics, Chemistry, and Geology of the Solar System	
ASTR 3115	Introduction to Astrophysics	
UTeach Columbu	s Teaching Option:	
(Only two attemp	ts allowed for each of the following courses)	
SPED 4115	Teaching Math and Science to Exceptional Learners (Students must earn a grade of B or better in order to be certified to teach in the state of Georgia.)	2 e

UTCH 1201	Step I: Inquiry Approaches to Teaching	1
UTCH 1202	Step II: Inquiry-Based Lesson Design	1
UTCH 2105	Knowing and Learning in Mathematics and Science	3
UTCH 2203	Step III: Technological and Pedagogical Content Knowledge	3
UTCH 3205	Classroom Interactions	3
UTCH 3215	Research Methods	3
UTCH 4205	Inquiry-Based Instruction	3
UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar	1
Required for the N	Major Total	42
Major Electives		
	5 credits in ESS major courses over 3000 must be d a total of at least 18 hours in Area H courses.	
1 hour from Area	A	1
1 hour from Area	D	1
Choose one of the	e following GEOL courses:	4
GEOL 4275	Structural Geology	
GEOL 3201	Mineralogy and Petrology I	
Choose one of the	e following ENVS courses:	4
ENVS 3105	Foundations of Environmental Science	
ENVS 5206U	Water Resources Management	
ENVS 5405U	Topics in Conservation	
Choose one of the	e following bio-geology courses:	3-4
GEOL 5135U	Oceanography	
GEOL 5165U	Hydrology	
GEOL 5215U	Geomorphology	
Choose one of the	e following Natural Hazards courses:	3-4
GEOL 5255U	Environmental Geology	
ATSC 5125U	Severe and Hazardous Weather	
ATSC 5116U	Meteorology	
Select 0-2 hours f	from the following (to total 18 Hours in Area H);	
Any 3000+ ATSC, PHYS course	ANTH, ASTR, BIOL, CHEM, ENVS, ENGR, GEOL or	
Major Electives T	otal	18
Total Credit Hours	s	123

Program Map with Pre-Calculus

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Title
Course
                                                               Credit
                                                               Hours
First Year
Fall
ENGL 1101
                 English Composition I (minimum grade of
                                                                    3
                 C)
MATH 1113
                 Pre-Calculus (minimum grade of C)
                                                                    4
  Three credits will count in Area A and one credit will count
  in Area H
GEOL 1121K
                 Introductory Geosciences I & Lab
                                                                    4
                 (minimum grade of C)
                 COMM 1110 Public Speaking or foreign
                                                                    3
Area B1
                 language 1001, 1002, 2001, 2002
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AREA W	PEDS Elective	1
	Credit Hours	15
Spring		
ENGL 1102	English Composition II (minimum grade of C)	3
GEOL 1122	Introductory Geo-sciences II: Historical Geology (minimum grade of C)	3
MATH 1131	Calculus with Analytic Geometry I (minimum grade of C)	4
Three credits v	will count in Area D and one credit in Area H	
UTCH 1201	Step I: Inquiry Approaches to Teaching (minimum grade of C)	1
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
Area B2	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
	Credit Hours	15
Second Year Fall		
CHEM 1211	Principles of Chemistry I (minimum grade of C)	3
CHEM 1211L	Principles of Chemistry I Lab (minimum grade of C)	1
POLS 1101	American Government	3
ATSC 1112	Understanding the Weather (minimum grade of C)	3
Area E	World Culture	3
UTCH 1202	Step II: Inquiry-Based Lesson Design (minimum grade of C)	1
ASTR 1105	Descriptive Astronomy: The Solar System (minimum grade of C)	3
ASTR 1105 is	taught only in the fall	
	Credit Hours	17
Spring CHEM 1212	Principles of Chemistry II (minimum grade of C)	3
CHEM 1212L	Principles of Chemistry II Lab (minimum grade of C)	1
ATSC 5117U	Global and Climate Change (minimum grade of C)	3
ATSC 5117U is	s taught only in the spring	
ENVS 1205K	Sustainability and the Environment (minimum grade of C)	4
AREA C	Fine Arts	3
UTCH 2105	Knowing and Learning in Mathematics and Science (minimum grade of C)	3
Third Year	Credit Hours	17
Fall PHYS 1111	Introductory Physics I (minimum grade of C)	3
PHYS 1311	Introductory Physics I Lab (minimum grade of C)	1
AREA G2	ASTR class (minimum grade of C) ⁵	4

AREA H	Program Elective (ENVS) (minimum grade of C)	3
UTCH 2203	Step III: Technological and Pedagogical Content Knowledge (minimum grade of C)	3
UTCH 2203 is	a fall only course	
	Credit Hours	14
Spring		
PHYS 1112	Introductory Physics II (minimum grade of C)	3
PHYS 1312	Introductory Physics II Lab (minimum grade of C)	1
AREA H	Elective (GEOL) (minimum grade of C)	3-4
Area C	Humanities	3
UTCH 3215	Research Methods (minimum grade of C)	3
UTCH 3215 is	a spring only course	
UTCH 3205	Classroom Interactions (minimum grade of C)	3
	Credit Hours	16-17
Fourth Year Fall		
UTCH 4205	Inquiry-Based Instruction (minimum grade of C)	3
AREA H	Program Elective (Natural Hazards) (minimum grade of C) ⁹	3-4
AREA H	Program Elective (Bio-Geology) (minimum grade of C) ⁹	3-4
Area E	Behavioral Science	3
AREA H	Elective credits as needed (minimum grade if C)	3-0
PHED 1205 or KINS 1106	Concepts of Fitness or Lifetime Wellness	2
	Credit Hours	17-16
Spring		
UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar (minimum grade of C)	1
SPED 4115	Teaching Math and Science to Exceptional Learners (minimum grade of B; see note below)	2
GaPSC. As of a higher in the E could be any o SPED 2256, EE This rule chan cannot becom	ent rule change for certification from the July 1, 2019, students must make a B or exceptional Children's course. The course of the following depending on your major. DCI 6228, KINS 4245, SPED 4115, PHED 6219 ge will not affect your graduation but you le a certified educator with the state of rou receive the grade of B or higher in this	
-	dent teaching, no courses other than those	
listed above shou		
	Credit Hours	12
	Total Cradit Hours	102

Total Credit Hours	123
ease note: Many of these courses are only offered o	once a year, or

 Please note: Many of these courses are only offered once a year, or once every 3-4 semesters, and many of them have prerequisites.
 While you can rearrange the order in which you take your courses, you should consult with your advisor to ensure that you will be able to take the courses in a timely manner so that you do not delay your graduation. This course map has been arranged so that the most commonly required prerequisites are scheduled in year 1 and year 2 to maximize options later.

- The program map illustrates appropriate coursework for completing a degree within 4 years, provided that course grades allow for earned credit. Please consult with your advisor to determine when courses can be switched out with others and taken in a different semester or sequence than illustrated, since not all courses are offered every semester.
- The map is for illustrative purposes only and does not constitute a legal contract on the part of CSU since degree requirements or course offerings could change. As always, check with your advisor.
- Students must complete "Area A" (ENGL 1101 English Composition I, ENGL 1102 English Composition II, and MATH 1001 Quantitative Skills and Reasoning or higher) prior to reaching 30 hours and earn a "C" or higher in ENGL 1101 and 1102.
- As of Fall 2013, all undergraduate students are required each semester to meet the 2.0 institutional GPA standard for satisfactory academic progress.

Program Map with with Calculus

Course	Title	Credit Hours
First Year Fall		
ENGL 1101	English Composition I (minimum grade of C)	3
MATH 1131	Calculus with Analytic Geometry I (minimum grade of C)	4
Area B1	COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002	3
GEOL 1121K	Introductory Geosciences I & Lab (minimum grade of C)	4
AREA W	PEDS Elective	
	Credit Hours	14
Spring		
ENGL 1102	English Composition II (minimum grade of C)	3
GEOL 1122	Introductory Geo-sciences II: Historical Geology (minimum grade of C)	3
MATH 1132	Calculus with Analytic Geometry II (minimum grade of C)	4
UTCH 1201	Step I: Inquiry Approaches to Teaching (minimum grade of C)	1
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
Area B2	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
	Credit Hours	15

Second Year Fall		
CHEM 1211	Principles of Chemistry I (minimum grade of C)	3
CHEM 1211L	Principles of Chemistry I Lab (minimum grade of C)	1
POLS 1101	American Government	3
ATSC 1112	Understanding the Weather (minimum grade of C)	3
AREA E	World Culture	3
UTCH 1202	Step II: Inquiry-Based Lesson Design (minimum grade of C)	1
ASTR 1105	Descriptive Astronomy: The Solar System (minimum grade of C)	3
ASTR 1105 is	offered only in fall	
	Credit Hours	17
Spring		
CHEM 1212	Principles of Chemistry II (minimum grade of C)	3
CHEM 1212L	Principles of Chemistry II Lab (minimum grade of C)	1
ATSC 5117U	Global and Climate Change (minimum grade of C)	3
ATSC 5117U	is a spring only course	
ENVS 1205K	Sustainability and the Environment (minimum grade of C)	4
AREA C	Fine Arts	3
UTCH 2105	Knowing and Learning in Mathematics and Science (minimum grade of C)	3
Third Year Fall	Credit Hours	17
PHYS 1111	Introductory Physics I (minimum grade of C)	3
PHYS 1311	Introductory Physics I Lab (minimum grade of C)	1
AREA G	ASTR class (minimum grade of C)	4
AREA H	Program Elective (ENVS) (minimum grade of C)	3
UTCH 2203	Step III: Technological and Pedagogical Content Knowledge (minimum grade of C)	3
UTCH 2203 is	a fall only course	
Spring	Credit Hours	14
PHYS 1112	Introductory Physics II (minimum grade of C)	3
PHYS 1312	Introductory Physics II Lab (minimum grade of C)	1
AREA H	Program Elective (GEOL) (minimum grade of C)	3-4
Area C	Humanities Elective	3
UTCH 3215	Research Methods (minimum grade of C)	3
UTCH 3215 is	a spring only course	

UTCH 3205	Classroom Interactions (minimum grade of C)	3
	Credit Hours	16-17
Fourth Year		
Fall		
UTCH 4205	Inquiry-Based Instruction (minimum grade of C)	3
Area H	Program Elective (Natural Hazards) (minimum grade of C)	3
Area H	Program Elective (Bio-Geology) (minimum grade of C)	3
Area E	Behavioral Science	3
AREA H	Program credits as needed (minimum grade of C)	3-0
PHED 1205	Concepts of Fitness	2
or KINS 1106	or Lifetime Wellness	
	Credit Hours	17-14
Spring		
UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar (minimum grade of C)	1
SPED 4115	Teaching Math and Science to Exceptional Learners (minimum grade of B; see note below)	2
There is a recent rule change for certification from the GaPSC. As of July 1, 2019, students must make a B or higher in the Exceptional Children's course. The course could be any of the following depending on your major. SPED 2256, EDCI 6228, KINS 4245, SPED 4115, PHED 6219 This rule change will not affect your graduation but you cannot become a certified educator with the state of Georgia until you receive the grade of B or higher in this course. Note: During student teaching, no courses other than those		
listed above shou		

Credit Hours	12
Total Credit Hours	122-120

- Please note: Many of these courses are only offered once a year, or once every 3-4 semesters, and many of them have prerequisites. While you can rearrange the order in which you take your courses, you should consult with your advisor to ensure that you will be able to take the courses in a timely manner so that you do not delay your graduation. This course map has been arranged so that the most commonly required prerequisites are scheduled in year 1 and year 2 to maximize options later.
- The program map illustrates appropriate coursework for completing a degree within 4 years, provided that course grades allow for earned credit. Please consult with your advisor to determine when courses can be switched out with others and taken in a different semester or sequence than illustrated, since not all courses are offered every semester.
- The map is for illustrative purposes only and does not constitute a legal contract on the part of CSU since degree requirements or course offerings could change. As always, check with your advisor.
- Students must complete "Area A" (ENGL 1101 English Composition I, ENGL 1102 English Composition II, and MATH 1001 Quantitative

Skills and Reasoning or higher) prior to reaching 30 hours and earn a "C" or higher in ENGL 1101 and 1102.

• As of Fall 2013, all undergraduate students are required each semester to meet the 2.0 institutional GPA standard for satisfactory academic progress.

Admission Requirements

Students must meet all requirements for admission to Teacher Education. For a list of current requirements, go to https:// cqtl.columbusstate.edu/teacher-education.php

Additional Program Requirements

Students must complete all courses related to their major with a C or better unless otherwise approved.

For teacher certification, students must obtain a minimum overall and CSU grade point average of 2.5.

Students must meet all requirements for admission to Teacher Education. For a list of current requirements, go to https:// cqtl.columbusstate.edu/teacher-education.php

Students must meet all requirements for admission to Student Teaching. For a list of current requirements, go to https://cqtl.columbusstate.edu/ student-teaching.php

To be recommended for teacher certification, students must pass the GACE Science Test I and Test II (https://gace.ets.org/).