

GEORGE MASON UNIVERSITY
COLLEGE OF SCIENCE
B.S. DEGREE IN EARTH SCIENCE (3450 Exploratory Hall, 703-993-3395)
<https://cos.gmu.edu/aoes/academics/undergraduate-programs/>
2018 - 2019 CATALOG

	<u>Department(s) & Course #(s)</u>	<u>Grade(s)</u>	<u>Needed</u>
<u>MASON CORE REQUIREMENTS (*30)</u>			
a. Written Communication: ENGH 101 (100), ENGH 302 (C or better) (3,3)		_____	_____
b. Oral Communication: COMM 100 or 101 (please circle choice) (3)		_____	_____
c. Quantitative Reasoning (satisfied by MATH 113)		_____	_____
d. Literature (3)	_____	_____	_____
e. Arts (3)	_____	_____	_____
f. Western Civilization (3)	_____	_____	_____
g. Social & Behavioral Science (3)	_____	_____	_____
h. Natural Science (satisfied by completion of major requirements)		_____	_____
i. Global Understanding (3)	_____	_____	_____
j. Information Technology (3)	_____	_____	_____
k. Synthesis (3) (may be satisfied by GEOL 420)	_____	_____	_____

Go to: <http://catalog.gmu.edu/mason-core/> to link to information on Mason Core requirements.

CORE SCIENCE and MATHEMATICS (40-41 hours required)

a. CHEM 211/213, CHEM 212/214 (3/1,3/1)	a. _____	_____
b. STAT 250, GEOL 101 (3, 4)	b. _____	_____
c. BIOL 309 or GEOL 309 (circle choice) (3)	c. _____	_____
d. GEOL 420 (3)	d. _____	_____
e. MATH 113, MATH 114 (4, 4)	e. _____	_____
f. *PHYS 243/ 244, PHYS 245/ 246 (3/1, 3/1) or PHYS 160/161, PHYS 260/261 (3/1, 3/1)	f. _____	_____
g. CLIM 111/112 (3/1) or PHYS 111/112 (3/1) or GGS 309 (3) (circle choice)	g. _____	_____

*Students in the Atmospheric Science Concentration must take the PHYS 160,161, 260, 261 sequence.

CONCENTRATION Select one of the following: (31-41)

Earth Surface Processes (31-36)

1. GEOL 102 or EVPP 110 (4), 2. GEOL 302 (4), 3. GEOL 303 (3), 4. GEOL 306 (3), 5. GEOL 317 (4) 6. GGS 311 (3), 7. **Ten to fifteen credits from the following** (circle choices): GEOL 304 (4), GEOL 305 (3), GEOL 313 (3), GEOL 315 (1-3), GEOL 363 (4), GEOL 401 (4), GEOL 403 (3), GEOL 417 (3),

Environmental Geoscience (35-41)

1. GEOL 102 (4), 2. GEOL 302 (4), 3. GEOL 305 (3), 4. GEOL 306 (3), 5. GEOL 313 (3), 6. GEOL 320 (3), 7. GEOL 321 (3), 8. GEOL 403 or CHEM 427 (3), 9. EVPP 336 or EVPP 361 (3), 10. **6-12 credits from:** CLIM 101 (3), CLIM 412 (3), CONF 101 (3), EVPP 201 (3), EVPP 336 (3), EVPP 361 (3), EVPP 432 (3), EVPP 436 (3), GEOL 304 (4), GGS 302 (3), GGS 311 (3), GGS 322 (3), INTS 211 (3-6) PHYS 331 (3), PRLS 300 (3), PRLS 402 (3)

Geology (34)

1. GEOL 102 (4), 2. GEOL 302 (4) 3. GEOL 304 (4), 4. GEOL 308 (4) 5. GEOL 312 (4), 6. GEOL 317 (4) 7. GEOL 401 (4), 8. GEOL 404 (six credits required)

Paleontology (36-39)

1. GEOL 102 (4), 2. GEOL 302 (4), 3. GEOL 304 (4), 4. GEOL 312 (4), 5. GEOL 334 (4), 6. BIOL 103 or BIOL 213 (4)
 7. **Nine to Ten credits from the following** (circle choices): GEOL 306 (3), GEOL 317 (4), GEOL 332 (3), GEOL 364 (3), GEOL 403 (3) GEOL 412 (3), GEOL 458 (3), GEOL 565 (3)
 8. **Three to five credits from the following** (circle choice(s)): BIOL 310 and BIOL 330 (2), BIOL 320 (4), BIOL 331 (4), BIOL 374 or GGS 321 (3), BIOL 468 or EVPP 468 (4), BIOL 470 (3), BIOL 471 (3)

Oceanography and Estuarine Studies (33-34)

1. GEOL 102 (4), 2. CLIM 412 or GEOL 412 (3), 3. GEOL 458 or CHEM 458 (3), 4. Select one of the following 8-credit sequences: BIOL 103 and 106/107 (4,4) or BIOL 213 and 303 (4,4) or EVPP 110 and 111 (4,4). 5. **One of the following options: Coastal Ocean:** GEOL 363 (4), and EVPP 581; **or Ocean:** GEOL 364 (3) and BIOL 449 (3), **and three additional courses from the following list for nine credits (9):** BIOL 440 (0-4), BIOL 449 (3), EVPP 350 (4), EVPP 377 (3), EVPP 419 (3), EVPP 581 (3), EVPP 582 (3), GEOL 302 (4), GEOL 304 (4), GEOL 308 (4), GEOL 312 (4), GEOL 363 (4), GEOL 364 (3), GEOL 565 (3), INTS 395 (1-18), RECR 161 (2).

A GPA of 2.0 or better required for all course work.

GENERAL ELECTIVES: Maximum 2 credits of PHED, PRLS, and RECR coursework toward a COS degree.

Only MLSC 400 and MLSC 402 may be used for credit towards a COS degree. (List courses)

_____	_____	_____
_____	_____	_____
_____	_____	_____

MINIMUM 120 HOURS (including Minimum 45 UPPER DIVISION HOURS) to GRADUATE

This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018-2019 Catalog; the University Catalog is the official reference for program requirements.

CONCENTRATION IN EARTH SURFACE PROCESSES

B.S. Earth Science

2018 - 2019

FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
GEOL 101	4	GEOL 102	4	*S.B.S = Social and Behavioral Science
MATH 113	4	CHEM 211	3	
COMM 100 or 101	3	CHEM 213	1	
Core (S.B.S)	3	MATH 114	4	
UNIV 100	1	ENGH 101	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
CLIM 111	3	GGG 311	3	*G.U. = Global Understanding
CLIM 112	1	GEOL 313	3	
CHEM 212	3	STAT 250	3	
CHEM 214	1	Core (Lit.)	3	
GEOL 302	4	Core (G.U.)	3	
GEOL 303	3			
Total:	15 credits	Total:	15 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
GEOL 304	4	GEOL 363	4	*W.C. = Western Civ.
GEOL 309	4	PHYS 245	3	
PHYS 243	3	PHYS 246	1	
PHYS 244	1	Core (W.C.)	3	
General Elective	3	Core (IT)	3	
		General Elective	2	
Total:	15 credits	Total:	16 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
GEOL 317	4	GEOL 420	3	
GEOL Elective	3 or 4	GEOL 306	3	
ENGH 302	3	Core (Arts)	3	
General Elective	3	General Elective	3	
General Elective	3			
Total:	16 or 17 credits	Total:	12 credits	

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

*GEOL 308 is recommended, but not required.

*Ten to Fifteen credits are required from the following coursework: **GEOL 304 (4)**, GEOL 305 (3), **GEOL 313 (3)**, GEOL 315 (1-3), **GEOL 363 (4)**, GEOL 401 (4), GEOL 403 (3), GEOL 417 (3).

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2018 - 2019

FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
GEOL 101	4	GEOL 102	4	*S.B.S = Social and Behavioral Science
MATH 113	4	CHEM 211	3	
COMM 100 or 101	3	CHEM 213	1	
Core (S.B.S)	3	MATH 114	4	
UNIV 100	1	ENGH 101	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
GEOL 302	4	GEOL 308	4	*W.C. = Western Civ.
CHEM 212	3	GEOL 312	4	
CHEM 214	1	Core (W.C.)	3	
STAT 250	3	Core (Lit.)	3	
GEOL 309	4	Core (Arts)	3	
Total:	15 credits	Total:	17 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
GEOL 317	4	PHYS 243	3	*G.U. = Global Understanding
CLIM 111	3	PHYS 244	1	
CLIM 112	1	Core (G.U.)	3	
General Elective	3	Core (IT)	3	
General Elective	3	ENGH 302	3	
Total:	14 credits	Total:	13 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
GEOL 420	3	GEOL 401	4	*GEOL 404 is generally taken during summer session at off campus site. If this is the case, student should ensure that they are enrolled in 12 credits in spring.
GEOL 304	4	GEOL 404*	6	
PHYS 245	3	General Elective	3	
PHYS 246	1	General Elective	3	
General Elective	3	General Elective	2	
Total:	14 credits	Total:	12-18 credits	

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

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2018 - 2019

FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
GEOL 101	4	GEOL 102	4	*S.B.S = Social and Behavioral Science
MATH 113	4	CHEM 211	3	
COMM 100 or 101	3	CHEM 213	1	
Core (S.B.S)	3	MATH 114	4	
UNIV 100	1	ENGH 101	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
GEOL 302	4	GEOL 305	3	*W.C. = Western Civ.
CHEM 212	3	GEOL 306	3	
CHEM 214	1	STAT 250	3	
Core (W.C.)	3	Core (Lit.)	3	
General Elective	3	Core (Arts)	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
GEOL 321	3	GEOL 313	3	*G.U. = Global Understanding
GEOL 309	4	GEOL 320	3	
CLIM 111	3	PHYS 243	3	
CLIM 112	1	PHYS 244	1	
Core (G.U.)	3	Core (IT)	3	
General Elective	1	ENGH 302	3	
Total:	15 credits	Total:	16 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
CLIM 412	3	GEOL 420 (Synth.)	3	
GEOL 304	4	GEOL 403	3	
GGS 311	3	EVPP 336	3	
PHYS 245	3	General Elective	3	
PHYS 246	1	General Elective	3	
Total:	14 credits	Total:	15 credits	

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

*Six to Twelve credits are required from the following coursework: CLIM 101 (3), CLIM 412 (3), CONF 101 (3), EVPP 201 (3), EVPP 336 (3), EVPP 361 (3), EVPP 432 (3), EVPP 436 (3), GEOL 304 (4), GGS 302 (3), GGS 311 (3), GGS 322 (3), INTS 211 (3-6), PHYS 331 (3), PRLS 300 (3), PRLS 402 (3).

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FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
GEOL 101	4	GEOL 102	4	*S.B.S = Social and Behavioral Science
MATH 113	4	CHEM 211	3	
COMM 100 or 101	3	CHEM 213	1	
BIOL 103	4	MATH 114	4	
UNIV 100	1	ENGH 101	3	
Total:	16 credits	Total:	15 credits	

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
GEOL 302	4	CLIM 111	3	
CHEM 212	3	CLIM 112	1	
CHEM 214	1	GEOL 312	4	
STAT 250	4	Core (S.B.S.)	3	
GEOL 309	3	Core (Lit.)	3	
Total:	15 credits	Total:	14 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
GEOL 317	4	ENGH 302	3	*G.U. = Global Understanding
GEOL 304	4	Core (IT)	3	
GEOL 332	3	PHYS 243	3	*W.C. = Western Civ.
Core (G.U.)	3	PHYS 244	1	
Core (W.C.)	3	General Elective	3	
Total:	17 credits	Total:	13 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
GEOL 420 (Synth.)	3	GEOL Elective	3	
BIOL 310	3	Core (Arts)	3	
BIOL 330	2	General Elective	3	
PHYS 245	3	General Elective	3	
PHYS 246	1	General Elective	3	
GEOL 334	4			
Total:	16 credits	Total:	15 credits	

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

*GEOL 303, GEOL 308, and GEOL 401 are recommended, but not required.

*Nine to Ten credits are required from the following coursework: GEOL 306 (3), **GEOL 317 (4)**, **GEOL 332 (3)**, GEOL 364 (3), GEOL 403 (3), GEOL 412 (3), GEOL 458 (3), GEOL 565 (3).

*Three to Five credits are required from the following coursework: [BIOL 310 \(3\)](#) and [BIOL 330 \(2\)](#), BIOL 320 (4), BIOL 331 (4), BIOL 374 or GGS 321 (3), BIOL 468 or EVPP 468 (4), BIOL 470 (3), BIOL 471 (3).

CONCENTRATION IN OCEANOGRAPHY AND ESTUARINE SCIENCE

B.S. Earth Science

2018 - 2019

FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
GEOL 101	4	GEOL 102	4	*S.B.S = Social and Behavioral Science
MATH 113	4	CHEM 211	3	
COMM 100 or 101	3	CHEM 213	1	
Core (S.B.S)	3	MATH 114	4	
UNIV 100	1	ENGH 101	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
GEOL 302	4	GEOL 312	4	
CHEM 212	3	BIOL 106	3	
CHEM 214	1	BIOL 107	1	
STAT 250	3	Core (Lit.)	3	
BIOL 103	4	Core (Arts)	3	
Total:	15 credits	Total:	14 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
GEOL 364	3	BIOL 449	3	
CLIM 111	3	GEOL 308	4	
CLIM 112	1	PHYS 243	3	
Core (IT)	3	PHYS 244	1	
General Elective	3	ENGH 302	3	
General Elective	3	General Elective	1	
Total:	16 credits	Total:	15 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
GEOL 309	3	GEOL 420 (Synth.)	3	*GEOL 458 is offered
GEOL 458*	3	RECR 161 (Scuba)	2	every other Fall in odd
GEOL 412	3	Core (W.C.)	3	years, so may need to
PHYS 245	3	Core (G.U.)	3	be taken Year 3.
PHYS 246	1	General Elective	3	*W.C. = Western Civ.
General Elective	3			*G.U. = Global
Total:	16 credits	Total:	14 credits	Understanding

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

*Select one of the following 8-credit sequences: BIOL 103 (4) and BIOL 106/107 (4), BIOL 213 (4) and BIOL 303 (4), OR EVPP 110 (4) and EVPP 111 (4).

*Select the Coastal Ocean Option (GEOL 363 [4] and EVPP 581 [3]) OR the Ocean Option (GEOL 364 [3] and BIOL 449 [3]).

*Select three additional courses from the following coursework to equal at least nine credits: BIOL 440 (0-4), BIOL 449 (3), EVPP 350 (4), EVPP 377 (3), EVPP 419 (3), EVPP 581 (3), EVPP 582 (3), GEOL 302 (4), GEOL 304 (4), GEOL 308 (4), GEOL 312 (4), GEOL 363 (4), GEOL 364 (3), GEOL 565 (3), INTS 395 (1-18) RECR 161 (2). **STUDENTS SHOULD NOTE THAT INTS 395 IS THE ONLY WRITING-INTENSIVE COURSE REQUIRED FOR THIS CONCENTRATION AND MAY WISH TO WORK IT INTO THEIR SCHEDULE TO FULFILL THIS PARTICULAR MASON CORE REQUIREMENT. OTHERWISE, THE STUDENT WILL BE REQUIRED TO TAKE GEOL 305 OR GEOL 317 IN ORDER TO FULFILL THE WRITING-INTENSIVE REQUIREMENT AND NEITHER OF THESE COURSES ARE REQUIRED FOR THE OCEANOGRAPHY AND ESTUARINE SCIENCE CONCENTRATION.**

*GEOL 304 is recommended, but not required.

*When choosing concentration electives, be aware that GEOL 302 and 308 are common prerequisites for other ESCI coursework.