

B.S. Geoscience Handbook

Department of Earth and Space Sciences



TABLE OF CONTENTS

Page 2 – B.S. Geoscience: (Earth Systems Conc.) Advising Sheet

Page 4 – B.S. Geoscience: (Geology Conc.) Advising Sheet

Page 6 – Undergraduate Course Rotation

Page 7 – Core Prerequisite Course Paths

Page 8 – Advising Notes

Page 9 – Course Requirement Notes: Non-Core Courses

Page 11 – Course Requirement Notes: Core (ESS) Courses

Page 12 – Elective & Minor Recommendations; PG Licensure

Page 13 – Transfer Credit Information; Academic Notes

Page 14 – Other Department Opportunities

Page 15 – Accelerated Program toward M.S. Geoscience

Page 20 – Frequently Asked Questions (FAQs)

B.S. GEOSCIENCE MAJOR, EARTH SYSTEMS CONCENTRATION (120 CREDITS)

Name:	Major Declared Date:	Planned Grad Date:				
		CREDITS	COURSE	SEMESTER	GRADE	REP/W*
GENERAL EDUCATION REQUIREMENTS (36 CREDITS)						
WRT120	3					
WRT200, or 204, or 205, or 206, or 208, or 220	3					
SPK 208 OR 230	3					
DIVERSE COMMUNITIES "J" COURSE	3					
INTERDISCIPLINARY "I" COURSE (ESS/SCB/ENV 102 OR SCB 210)	FULFILLED BELOW					
BEHAVIOR & SOCIAL SCI. (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: ANT SOC PSY ECO GEO PSC)	3					
	3					
HUMANITIES (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: LIT CLS HIS PHI)	3					
	3					
ARTS (ART, CINEMATOGRAPHY, MUSIC, PHOTOGRAPHY, THEATRE)	3					
STUDENT ELECTIVES (9 CREDITS)	3					
	3					
	3					
MATH (6 CREDITS)						
MAT 115 – Algebra & Trigonometry or MAT 131 – Pre-calculus	3					
MAT 121 – Statistics I	3					
SCIENCE COGNATES (11 CREDITS)						
BIO 110 – General Biology	3					
CHE 103 – General Chemistry I	3					
CRL 103 – Experimental General Chemistry I	1					
Recommend CHE 104 – General Chemistry II						
Recommend CRL 104 – Experimental General Chemistry II						
PHY 130 – General Physics I or PHY 170 – Physics I	4					
Recommend PHY 140 – General Physics II or PHY 180 – Physics II						
CORE REQUIREMENTS (30 CREDITS) – AND WHEN OFFERED						
ESS 101 – Introduction to Geology – both semesters	3					
ESS 204 – Historical Geology (W) – both semesters	3					
ESS 201 – Field Geology (W) – both semesters	3					
ESS 301 – Environmental Geochemistry – spring	3					
ESS 302 – Mineralogy – fall (spring as needed)	3					
ESS 331 – Paleontology (W) – spring (fall as needed)	3					
ESS 343 – Geomorphology – spring (fall as needed)	3					
ESS 405 – Igneous and Metamorphic Petrology – spring	3					
ESS 420 – Structural Geology – spring	3					
ESS 450 – Sedimentology and Stratigraphy – fall	3					
ADDITIONAL REQUIREMENTS (14 CREDITS)						
ESS/SCB/ENV 102 – Humans & the Environment, or SCB 210 (I)	3					
ESS 311 – Introduction to Astronomy – fall	3					
ESS 330 – Introduction to Oceanography – both semesters	3					
ESS 370 – Introduction to Meteorology – fall	3					
ESS 347 – Seminar – fall	1					
ESS 447 – Seminar – fall	1					
ELECTIVE COURSES – ANY 200 - 400 LEVEL ESS COURSES (MINIMUM 6 CREDITS); OTHER ELECTIVES TO 120 CREDITS TOTAL						
ESS elective at 200-400 level:	3					
ESS elective at 200-400 level:	3					
Other electives to achieve 120 credits:	17					

• 3 classes above must be "W" emphasis.

- "I" course cannot be applied as a distributive requirement (Science, Humanities, or Behavioral & Social Science)

B.S. Geoscience, Earth Systems Concentration – SUGGESTED sequence

	Fall	Spring
YEAR 1 30 cr	ESS 101 (3) MAT 115 or 121 (3) WRT 120 (3) Gen Ed Soc/Behav (3) Gen Ed Elective (3)	MAT 121 or 115 (3) WRT 204 205 206 208 or 220 (3) BIO 110 (3) Gen Ed Soc/Behav (3) ESS 204 or 201 Gen Ed “W” course (3)
YEAR 2 32-33 cr	ESS 201 or 204 Gen Ed “W” (3) ESS 311 (3) CHE CRL 103 (4) ESS 480 (1) Gen Ed Hum (3) Gen Ed “J” course (3)	ESS 102 or SCB 210 “I” course (3) ESS 301 (3) ESS 302 (3) Gen Ed Hum (3) Elective Recommend CHE & CRL 104 (3-4)
YEAR 3 30-31 cr	ESS 330 (3) ESS 347 (1) ESS 370 (3) PHY 130 (4) & ESS 480 (1) ESS 302 (3)	ESS 331 Gen Ed “W” course (3) ESS 343 (3) Gen Ed SPK (3) ESS 405 (3) ESS 420 (3)
YEAR 4 28 cr	ESS 447 (1) ESS 450 (3) Gen Ed Art (3) Gen Ed Elective (3)	Elective: recommend GEO 324 (3) ESS elective (3) Gen Ed Elective (3) Elective: Recommend PHY 140 (3-4) Elective (3)

APPROVED GENERAL EDUCATION COURSES

Behavioral and Social Sciences (6 credits from 2 areas):

Anthropology: ANT 101, ANT 102, ANT 103
 Economics: ECO 111, ECO 112, ECO 200
 Geography: GEO 101, GEO 103, GEO 200, GEO 214, GEO 230
 Government: PSC 100, PSC 101, PSC 213
 Psychology: PSY 100
 Sociology: SOC 200, SOC 240, SOC 245

Humanities (6 credits from 2 areas):

History: HIS 100, HIS 101, HIS 102, HIS 150, HIS 151, HIS 152, HIS 444
 Literature: LIT 100, LIT 101, LIT 165, LIT 219, LIT 220, CLS 165, CLS 260, CLS 261
 Philosophy: PHI 100, PHI 101, PHI/PHY 125, PHI 150, PHI 180, PHI 201, PHI 206, PHI 207, PHI 220, PHI 280, PHI 282, PHI 350

Arts (3 credits):

Art: ARH 101, ARH 103, ARH 104, ARH 210, ARH 211, ART 106, ART 111, ART 113, ART 228, ART 231
 Dance: DAN 132, DAN 133, DAN 134, DAN 135, DAN 136, DAN 137, DAN 138, DAN 150, DAN 210
 Film: FLM 200, EGE 405, ESP 305, ESP 309, GER 405, SPA 313
 Music: MDA 240, MHL 121, MHL 125, MHL 210, MHL 312, MHL 325, MTC 110
 Theatre: THA 101, THA 103, THA 212

B.S. GEOSCIENCE MAJOR, GEOLOGY CONCENTRATION (120 CREDITS)

Name:	Major Declared Date:	Planned Grad Date:				
		CREDITS	COURSE	SEMESTER	GRADE	REP/W*
GENERAL EDUCATION REQUIREMENTS (36 CREDITS)						
WRT120	3					
WRT200, or 204, or 205, or 206, or 208, or 220	3					
SPK 208 or 230	3					
DIVERSE COMMUNITIES "J" COURSE	3					
INTERDISCIPLINARY "I" COURSE (ESS/ENV/SCB 102)	FULFILLED BELOW					
BEHAVIOR & SOCIAL SCI. (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: ANT SOC PSY ECO GEO PSC)	3					
	3					
HUMANITIES (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: LIT CLS HIS PHI)	3					
	3					
ARTS: (ART, CINEMATOGRAPHY, MUSIC, PHOTOGRAPHY, THEATRE)	3					
STUDENT ELECTIVES (9 CREDITS)	3					
	3					
	3					
MATH AND COMPUTER SKILLS (9 OR 10 CREDITS)						
MAT 143 -- Brief Calculus, or MAT 161—Calculus I	3 or 4					
MAT 121 -- Statistics	3					
ESS 321 -- Geometrics, or (GEO 324 or GEO325) -- GIS, or CSC 115 or higher -- Computer Science	3					
SCIENCE COGNATES (8 CREDITS)						
Recommend BIO 110 – General Biology						
CHE 103 – General Chemistry I	3					
CRL 103 – Experimental General Chemistry I	1					
Recommend CHE 104 – General Chemistry II						
Recommend CRL 104 – Experimental General Chemistry II						
PHY 130 – General Physics I, or PHY 170 – Physics I	4					
Recommend PHY 140 – General Physics II, or PHY 180 – Physics II						
CORE REQUIREMENTS (30 CREDITS) – AND WHEN OFFERED						
ESS 101 – Introduction to Geology – both semesters	3					
ESS 204 – Historical Geology – both semesters	3					
ESS 201 – Field Geology – both semesters	3					
ESS 301 – Environmental Geochemistry – spring	3					
ESS 302 – Mineralogy – fall (spring as needed)	3					
ESS 331 – Paleontology (W) – spring (fall as needed)	3					
ESS 343 – Geomorphology – both semesters	3					
ESS 405 – Igneous and Metamorphic Petrology – spring	3					
ESS 420 – Structural Geology – spring	3					
ESS 450 – Sedimentology and Stratigraphy – fall	3					
ADDITIONAL REQUIRED COURSE (8 CREDITS)						
ESS/SCB/ENV 102 – Humans & the Environment (I) – both	3					
ESS 439 – Hydrogeology – spring	3					
ESS 347 – Seminar – fall	1					
ESS 447 – Seminar – fall	1					
ELECTIVE COURSES – ANY 200 - 400 LEVEL ESS COURSES (MINIMUM 9 CREDITS); OTHER ELECTIVES TO 120 CREDITS TOTAL						
ESS elective at 200-400 level:	3					
ESS elective at 200-400 level:	3					
ESS elective at 200-400 level:	3					
Other electives to achieve 120 credits:	20 or 19					

- 3 classes above must be "W" emphasis.

- "I" course cannot be applied as a distributive requirement (Science, Humanities, or Behavioral & Social Science)

B.S. Geoscience, Geology Concentration – SUGGESTED sequence

	Fall	Spring
YEAR 1 30 cr	ESS 101 (3) MAT 115 or 121 (3) WRT 120 (3) Gen Ed Soc/Behav (3) Gen Ed Elective (3)	MAT 121 or 115 (3) WRT 200 204 205 206 208 or 220 (3) ESS 204 or 201 Gen Ed “W” course (3) Gen Ed Soc/Behav (3) Gen Ed Elective (3)
YEAR 2 32-33 cr	ESS 201 or 204 Gen Ed “W” course (3) ESS Elective: recommend GEO 324 (3) CHE CRL 103 (4) & ESS 480 (1) Gen Ed Hum (3) Gen Ed “J” course (3)	ESS 102 – “I” course (3) ESS 301 (3) MAT 108 or 161 (3 or 4) ESS 331 Gen Ed “W” course (3) Elective Recommend CHE & CRL 104 (3-4)
YEAR 3 30-31 cr	ESS 302 (3) ESS 347 (1 credit) ESS 321, GEO 324/325, or CSC 115 (3) PHY 130 or 170 (4) & ESS 480 (1) Gen Ed Hum (3) Elective (3)	ESS 343 (3) ESS 439 (3) ESS 405 (3) ESS 420 (3) Gen Ed SPK (3)
YEAR 4 28 cr	ESS 450 (3) ESS 447 (1 credit) Gen Ed Art (3) Gen Ed Elective (3) ESS Elective (3)	ESS elective (3) Elective: Recommend PHY 140 (3-4) Elective (3) Elective (3) Elective (3)

APPROVED GENERAL EDUCATION COURSES

Behavioral and Social Sciences (6 credits from 2 areas):

Anthropology: ANT 101, ANT 102, ANT 103
 Economics: ECO 111, ECO 112, ECO 200
 Geography: GEO 101, GEO 103, GEO 200, GEO 214, GEO 230
 Government: PSC 100, PSC 101, PSC 213
 Psychology: PSY 100
 Sociology: SOC 200, SOC 240, SOC 245

Humanities (6 credits from 2 areas):

History: HIS 100, HIS 101, HIS 102, HIS 150, HIS 151, HIS 152, HIS 444
 Literature: LIT 100, LIT 101, LIT 165, LIT 219, LIT 220, CLS 165, CLS 260, CLS 261
 Philosophy: PHI 100, PHI 101, PHI/PHY 125, PHI 150, PHI 180, PHI 201, PHI 206, PHI 207, PHI 220, PHI 280, PHI 282, PHI 350

Arts (3 credits):

Art: ARH 101, ARH 103, ARH 104, ARH 210, ARH 211, ART 106, ART 111, ART 113, ART 228, ART 231
 Dance: DAN 132, DAN 133, DAN 134, DAN 135, DAN 136, DAN 137, DAN 138, DAN 150, DAN 210
 Film: FLM 200, EGE 405, ESP 305, ESP 309, GER 405, SPA 313
 Music: MDA 240, MHL 121, MHL 125, MHL 210, MHL 312, MHL 325, MTC 110
 Theatre: THA 101, THA 103, THA 212

UNDERGRADUATE COURSE ROTATION

Every Semester

- ESS 101 Introduction to Geology, including Summer
- ESS 102 Humans and the Environment
- ESS 111 Other Worlds, Other Stars
- ESS 112 Galaxies and Cosmology
- ESS 201 Field Geology, including Summer
- ESS 204 Historical Geology
- ESS 330 Oceanography
- ESS 331 Paleontology
- ESS 343 Geomorphology
- ESS 460 Internship, including Summer
- ESS 491 Independent Studies, including Summer

Every Fall

- ESS 302 Mineralogy
- ESS 311 Introduction to Astronomy
- ESS 321 Geometrics
- ESS 347/447 Earth and Space Science Seminar
- ESS 370 Introduction to Meteorology
- ESS 450 Sedimentology & Stratigraphy

Every Spring

- ESS 301 Geochemistry
- ESS 336 Environmental Geology
- ESS 405 Petrology
- ESS 420 Structural Geology
- ESS 439 Hydrogeology

Every Summer

- ESS 323 Field Geology of Southeastern PA

Fall of Even Years

- ESS 442 Geophysics
- ESS 549 Advanced Hydrogeology – *Note: Graduate only section; must be enrolled in Accelerated Program (see page 14)*

Fall of Odd Years

- ESS 355 Intermediate Astronomy
- ESS 490 Soils

Spring of Even Years

- ESS 307 Geology of the Solar System
- ESS 371 Advanced Meteorology
- ESS 435 Remote Sensing

Spring of Odd Years

- ESS 332 Advanced Oceanography
- ESS 362 History of Astronomy

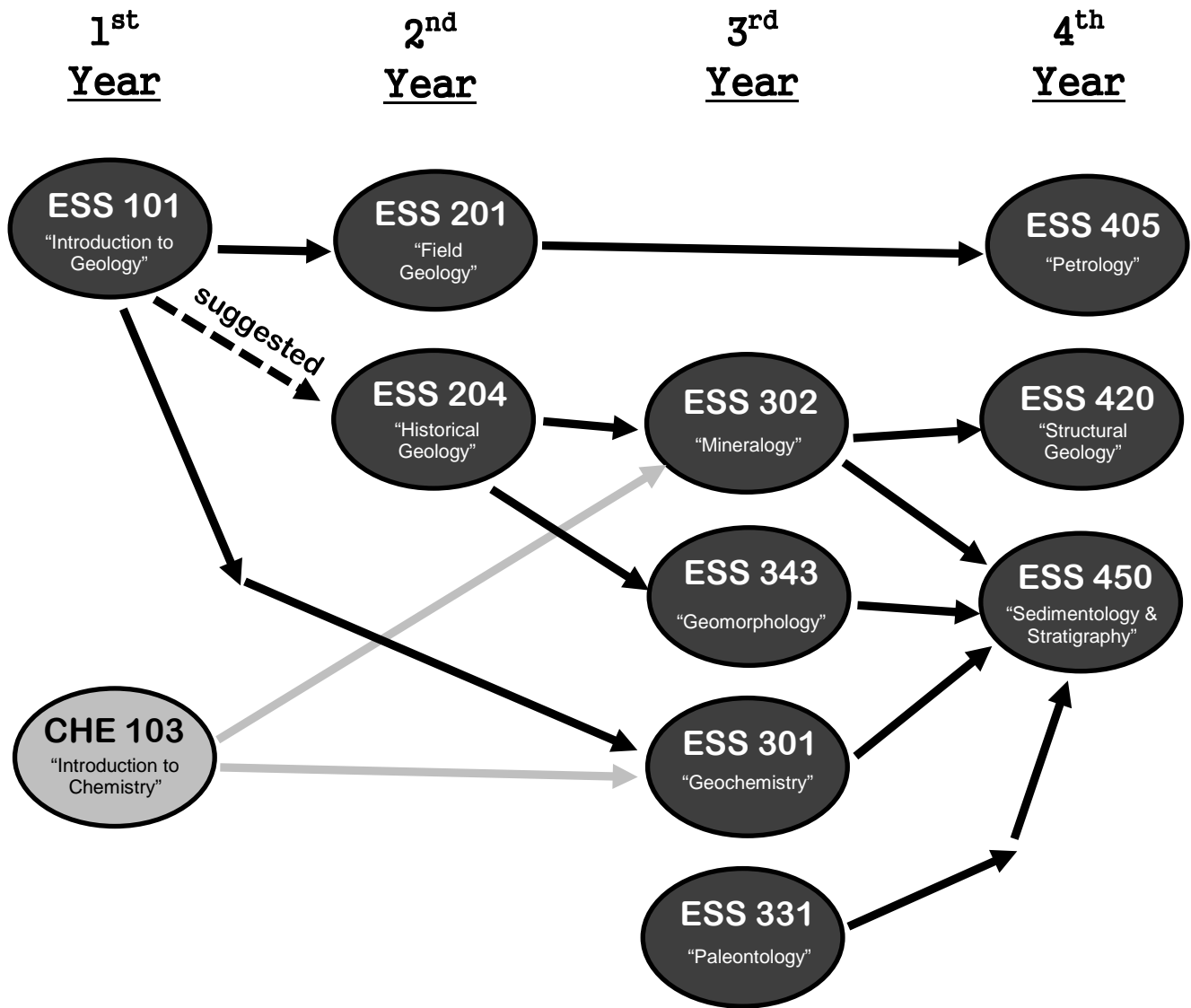
Summer of Odd Years

- ESS 394 Geology of Northwestern National Parks, alternating with
- ESS 395 Geology of Southwestern National Parks

Courses Offered Outside of Rotation

- ESS 344 Advanced Geomorphology
- ESS 448 Int'l Geology Field Studies
- ESS 480 Special Topics

CORE PREREQUISITE COURSE PATHS



ADVISING NOTES

- **It is ultimately your responsibility to understand the rules and take the correct sequence of courses to graduate on time!**

- Use your **Degree Progress Report (DPR)** In MyWCU
 - 120 credits is the magic number
 - Some courses, such as remedial (e.g., ENG Q20, MAT00) or repeated classes don't count
 - Be careful of courses that are less than 3 credits
 - The DPR will **always** have the correct number of credits

- Department advising sheets
 - Use the one found on Page 2 (Earth Systems Concentration) or Page 4 (Geology Concentration)
 - Add courses and grades at the end of each semester
 - Bring with you to advising appointments

- When do I schedule courses?
 - Check MyWCU (you should receive an email or text update)
 - The "enrollment appointment" is NOT the appointment with your advisor
 - **You need to make the appointment to meet with your advisor**
 - Email your advisor and request a time, preferably during office hours; provide information about your schedule if needed

COURSE REQUIREMENT NOTES: Non-Core Courses

• General Education distributive requirements:

- Required of all students
- Must take the **approved** General Education courses (list at bottom of Pages 3 and 5)
- You cannot take Gen. Ed. courses Pass/Fail
- The science and math distributive requirements are automatically fulfilled within the Geoscience major
- **TRANSFERS**: can transfer in other courses different from the approved list if the prefix transfers as ANT, PSY, SOC, ECO, GEO, PSC, LIT, CLS, HIS, PHI, and the Arts
- However, there must be:
 - **2 different** prefixes from the Behavioral/Social Sciences (ANT, PSY, SOC, ECO, GEO, PSC), and
 - **2 different** prefixes from the Humanities (LIT, CLS, HIS, PHI)

• Writing requirements:

- Start where you need to start in writing – build a solid foundation
- Take Gen. Ed. writing courses (**WRT 120** and **WRT 200-level**) your first year
- Difficult to transfer in 200-level writing courses; expectations of amount and kind of writing by the English Department
- Also, 3 Writing Emphasis (**W**) courses -- this is different from the WRT 120/200 requirement! -- are required
- The W requirement is fulfilled within the Geoscience major via ESS 201, 204, and 331
- If you take one of these courses elsewhere, it will NOT transfer in with the W designation, but...
- **TRANSFERS** who enter with:
 - 40-70 transfer credits take **2** W courses
 - > 70 transfer credits take **1** W course



• Other Gen. Ed. requirements:

- 1 Interdisciplinary (**I**) course is required
 - Fulfilled within our major via ESS 102 (Humans & the Environment)
 - I course can only be applied toward the Interdisciplinary requirement. It **cannot** fulfill a Gen. Ed. distributive requirement
- 1 Diverse Communities (social justice) (**J**) course is required
 - You **must** take at WCU. It is (almost) impossible to transfer in a J course from another university
 - J course **can** also count as a Gen. Ed. distributive requirement

- Math requirement:

- Start with the math course that best fits your skills and comfort level
- Complete **MAT 115** (Algebra, Functions, and Trigonometry) within the first year of entering major since it is needed for CHE, PHY, and ESS courses
 - For the Earth Systems concentration: Register for the MAT 115 section set aside for BIO/ESS majors
- Do not expect to substitute MAT 113 (Algebra and Functions) for MAT 115.
- You can substitute MAT 131 (Pre-calculus) for MAT 115, but you will not get review of trigonometry
- **TRANSFERS:**
 - If you have **not** taken a math course in college, you must take the math placement exam. Prepare for the exam, and take it seriously. You can re-take the exam. More information can be found at:
<https://www.wcupa.edu/sciences-mathematics/mathematics/placementPolicy.aspx>
 - If you **have** transferred a math course, and the equivalent is **BELOW** the required math course on the advising sheet, also take the math placement exam so you can enroll in the most appropriate math course for you.
 - If you **have** transferred a math course, and the equivalent is **AT or ABOVE** the required math course on the advising sheet, the Chair or advisor will verify the course transfers correctly.
- Students interested in astronomy, meteorology, and/or graduate school should take MAT 161 (Calculus) and beyond.

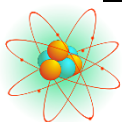


- Biology requirement:



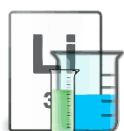
- **BIO 110** -- only required for the Earth Systems concentration
- Some BIO 110 lab sections are closed for block-scheduling

- Physics requirement:



- Enroll in **PHY 130** (includes lab, 4 credits)
- Offered in summer during Session 1 only
- Can transfer in; check online “Transfer Equivalency Matrix” to make sure it is PHY 130

- Chemistry requirement:



- Enroll in both **CHE 103** and **CRL 103**. You **must** take CHE 103 before or concurrently with CRL 103; you **cannot** take CRL 103 first
- If enrolled in both, you can withdraw from CHE 103 and remain in CRL 103 for credit
- Take CHE 103 as early as possible (it’s a prerequisite for ESS 301 and ESS 302)
- However, it is encouraged you take MAT 115 before CHE 103
- Can transfer in; check online “Transfer Equivalency Matrix” to make sure it is CHE 103 and CRL 103

COURSE REQUIREMENT NOTES: Core (ESS) Courses

- Take ESS 301 (Geochemistry) your junior year to graduate on time!
- Your final year will be ESS 405 (Petrology) and ESS 450 (Sedimentology & Stratigraphy) in the fall, and ESS 420 (Structural Geology) in the spring.
- How to enroll in **ESS 491 (Independent Studies)**:
 - You cannot schedule ESS 491 on you own.
 - A minimum 2.00 GPA is required.
 - Solidify a topic and # of credits (1-3) with a faculty advisor. Go to:
<https://www.wcupa.edu/registrar/documents/independentStudyIndivInstructionEN.pdf>
and give the completed “Independent Studies” form to the faculty advisor to sign.
 - Make sure your advisor places the # of credits on the form’s top.
- How to enroll in **ESS 460 (Internship)**:
 - Communicate your intent to use an internship opportunity for credit to your internship coordinator
 - In the e-mail provide a paragraph summarizing the internship opportunity and emphasizing its relationships to the Geosciences.
 - Also specify the # of credits (1-6). **One (1) credit corresponds to 45 hours of work per semester, including academic activities.**
 - The internship coordinator will then have ESS 460 created for you.
 - Register for the course!
 - Midway through the course, both you and your employer will e-mail your internship coordinator for verification.
 - In order to receive a grade, you will then need to **by the end of the course** write a paper summarizing the internship experience.
 - Your grade will also be based on a letter of evaluation from the employer to the internship coordinator.

ELECTIVE AND MINOR RECOMMENDATIONS

Recommended courses outside the Department:

- ENV 230 (HAZWOPR course). 40-hr course providing training required by OSHA and EPA to work sites where hazardous materials may be stored or used.
- ENV 333 (Water Quality and Health)
- ENV 345 (Risk Assessment)
- ENV 347 (Environmental Regulations)
- ENV 351 (Environmental Toxicology)
- GEO 324 (Introduction to GIS)
- GEO 325 (Business Geographics)
- MAT 162 (Calculus II)
- MAT 311 (Linear Algebra)

Recommended minors:

- Geography & Planning
- Ecology
- Chemistry
- Physics
- Math
- Environmental Health (if strong CHE/BIO coursework)

PG LICENSURE

PG licensure is obtained by first passing the Fundamentals of Geology (FG) exam. **You must have taken ESS 201 (Field Geology) and ESS 420 (Structural Geology) to take the FG exam.** Upon successful completion of the FG exam, you become a Geologist-in-Training (GIT).

After 5 years in a working environment (of which 1 year can include graduate school) as a GIT, you become eligible to take the Practice of Geology (PG) exam. **You must also have taken 30 credits of geology courses to take the PG exam.**

Students interested in learning more about licensure may contact the State Registration Board for Professional Engineers, Land Surveyors and Geologists at www.dos.pa.gov/eng.

TRANSFER CREDIT INFORMATION

- Transfer Credit Center
 - **WCU website** → **Current Students** → **Registrar**
- If you want to take a course off-campus. BEFORE you take the class:
 - Check the **Transfer Equivalency Matrix** at the Transfer Credit Center, available here:
<http://www.wcupa.edu/registrar/transferCredit.aspx>
 - Next, download the “**Transfer Credit PERMISSION**” form found here:
[https://www.wcupa.edu/registrar/documents/Transfer Credit Permission FormDec 2017 - EN.pdf](https://www.wcupa.edu/registrar/documents/Transfer%20Credit%20Permission%20FormDec%202017%20-%20EN.pdf)
 - Submit completed form to the Registrar.
 - Enroll in the class; do very well; credits transfer in!
- If you already took the course, and it doesn't transfer in the way you want:
 - Download the “**Transfer Credit APPEAL**” form found here:
<https://www.wcupa.edu/registrar/documents/TransferCreditAppealForm-2017EN.pdf>
 - Take the completed form, with a copy of the course syllabus, to the appropriate Department Chair.
 - Submit completed form to the Registrar.

IMPORTANT ACADEMIC NOTES

1. **Academic probation** will occur if your cumulative GPA falls below 2.00.
 - You then must schedule an appointment with your advisor by the beginning of the next semester to develop an Academic Recovery Plan (ARP).
2. A single course may not be repeated more than **twice**.
3. If you *take and complete* a course at WCU, you **cannot** repeat the course elsewhere.
4. The Department -- as does the University -- takes **Academic Integrity** seriously.
 - Plagiarism, fabrication, cheating, academic misconduct, facilitating academic dishonesty, and breach of standard of professional ethics constitute violations of academic integrity.
 - If academic integrity is suspected, the faculty member fills out a “Report of Violation of Academic Integrity” form with supporting documentation.

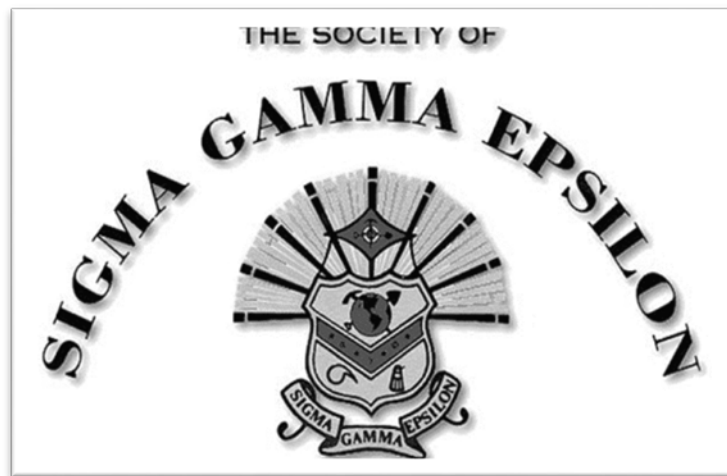
Additional information relating to Academic Integrity can be accessed at:

<http://catalog.wcupa.edu/undergraduate/academic-policies-procedures/academic-integrit>

OTHER DEPARTMENT OPPORTUNITIES

- **Sigma Gamma Epsilon (SGE)**

- Membership to SGE, the national geological honor society, is eligible for Geoscience majors who: a) have taken at least 10 credits in ESS courses, and b) have a GPA of at least 2.67.
- The honor society consists of dozens of active students who hold monthly meetings to organize – and participate in! – events, including camping, hiking, social events, the initiation ceremony, bake sales, and other fund raisers.
- For more information or participation, contact a member of the SGE cabinet.



- **Scholarships**

- Each semester, the Department offers scholarships (typically \$1000) for tuition. Recipients are chosen based on GPA, academic achievement, articulated career goals, and need.
- Advertisements and scholarship applications are disseminated via e-mail midway through the semester.

- **Travel & Research Grants**

- In addition, the Department offers travel and research grants (typically \$500 each) for students who wish to pursue -- and present -- research projects.
- Advertisements and grant applications again are disseminated via e-mail midway through the semester.

ACCELERATED OPTION TOWARD THE M.S. GEOSCIENCE DEGREE

Students earning a B.S. Geoscience degree from West Chester University have the option to complete the M.S. Geoscience degree during their 5th year.

Program Overview:

1. Enroll in the B.S. Geoscience “Accelerated” program your junior year. Directions on how to apply are at the bottom. **You must have a minimum cumulative GPA of 3.0 and have earned at least 90 credits to be accepted.**
2. Take up to 9 credits of graduate substitution courses (a list is included in the B.S. Geoscience Accelerated program advising sheets on the next page) during your 3rd and/or 4th years. These courses will count toward your 120-credit B.S. Geoscience degree.
3. Undergraduates pay undergraduate tuition and applicable fees for graduate substitution courses, and are bound by the undergraduate academic policies and regulations.
4. Upon graduation, you have the option to enroll in the M.S. Geoscience program. **Note: You are not obligated or contracted to remain in the Department to pursue an M.S.**
5. The 9 credits of graduate substitution courses you took as an undergraduate will now count toward your M.S. Geoscience degree.
6. Therefore, you will have 36 – 9, or 27, outstanding graduate credits -- plus the final project -- to complete in the forthcoming year (i.e., Year 5).

For additional policies and information regarding the accelerated program, go to:

- <http://catalog.wcupa.edu/undergraduate/accelerated-programs/>

To Enroll in the Accelerated Program:

1. **In your junior year**, obtain the necessary signatures on the form below, and submit to the Department Graduate Coordinator.

- <http://www.wcupa.edu/registrar/documents/AcceleratedProgramEnrollmentRequest.pdf>

2. After processing, contact the Graduate Coordinator stating which graduate course(s) in which you would like to enroll. He or she will then give you permission to enroll. **You will need to enroll in the graduate courses yourself.**

To Enroll in the M.S. Geoscience Program:

In your senior year, you will be given the option via MyWCU to pursue your M.S. in Geoscience. If you decide to do so, please click to accept.

ACCELERATED B.S. GEOSCIENCE, EARTH SYSTEMS CONC. TO M.S. GEOSCIENCE

Name:	Major Declared Date:	Planned Grad Date:			
	CREDITS	COURSE	SEMESTER	GRADE	REP/W*
GENERAL EDUCATION REQUIREMENTS (36 CREDITS)					
WRT120	3				
WRT200, or 204, or 205, or 206, or 208, or 220	3				
SPK 208 or 230	3				
DIVERSE COMMUNITIES "J" COURSE	3				
INTERDISCIPLINARY "I" COURSE (ESS/SCB/ENV 102 OR SCB 210)	FULFILLED BELOW				
BEHAVIOR & SOCIAL SCI. (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: ANT SOC PSY ECO GEO PSC)	3				
	3				
HUMANITIES (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: LIT CLS HIS PHI)	3				
	3				
ARTS (ART CINEMATOGRAPHY MUSIC PHOTOGRAPHY THEATRE)	3				
STUDENT ELECTIVES (9 CREDITS)	3				
	3				
	3				
MATH (6 CREDITS)					
MAT 115 – Algebra & Trigonometry or MAT 131 – Pre-calculus	3				
MAT 121 – Statistics	3				
SCIENCE COGNATES (11 CREDITS)					
BIO 110 – General Biology	3				
CHE 103 – General Chemistry I	3				
CRL 103 – Experimental General Chemistry I	1				
Recommend CHE 104 – General Chemistry II					
Recommend CRL 104 – Experimental General Chemistry II					
PHY 130 – General Physics I or PHY 170 – Physics I	4				
Recommend PHY 140 – General Physics II or PHY 180 – Physics II					
CORE REQUIREMENTS (30 CREDITS) – AND WHEN OFFERED					
ESS 101 – Introduction to Geology	3				
ESS 204 – Historical Geology (W) – both semesters	3				
ESS 201 – Field Geology (W) – both semesters	3				
ESS 301 – Environmental Geochemistry – spring	3				
ESS 302 – Mineralogy – fall (spring as needed)	3				
ESS 331 – Paleontology (W) – spring (fall as needed)	3				
ESS 343 – Geomorphology – spring (fall as needed)	3				
ESS 405 – Igneous and Metamorphic Petrology – spring	3				
ESS 420 – Structural Geology – spring	3				
ESS 450 – Sedimentology and Stratigraphy – fall	3				
ADDITIONAL REQUIREMENTS (14 CREDITS)					
ESS/SCB/ENV 102 – Humans & the Environment, or SCB 210 (I)	3				
ESS 311 – Introduction to Astronomy – fall	3				
ESS 330 – Introduction to Oceanography – both semesters	3				
ESS 370 – Introduction to Meteorology – fall	3				
ESS 347 – Seminar – fall	1				
ESS 447 – Seminar – fall	1				
GRADUATE Elective Courses – CONSULT LIST ON BACK FOR AVAILABLE COURSES (MAXIMUM 9 credits) ; other electives to 120 credits total					
ESS Graduate Substitution Course:	3				
ESS Graduate Substitution Course:	3				
ESS Graduate Substitution Course:	3				
Other 200-400 electives to achieve 120 credits:	14				

• 3 classes above must be "W" emphasis.

- "I" course cannot be applied as a distributive requirement (Science, Humanities, or Behavioral & Social Science)

ACCELERATED B.S. Geoscience, Earth Systems Conc. To M.S. Geoscience
SUGGESTED sequence

	Fall	Spring	
YEAR 1 30 cr.	ESS 101 (3) MAT 115 or 121 (3) WRT 120 (3) Gen Ed Soc/Behav (3) Gen Ed Elective (3)	MAT 121 or 115 (3) WRT 204 205 206 208 or 220 (3) BIO 110 (3) Gen Ed Soc/Behav (3) ESS 204 or 201 Gen Ed "W" course (3)	
YEAR 2 32-33 cr.	ESS 201 or 204 Gen Ed "W" (3) ESS 311 (3) CHE CRL 103 (4) & ESS 480 (1) Gen Ed Hum (3) Gen Ed "J" course (3)	ESS 102 or SCB 210 "I" course (3) ESS 301 (3) ESS 302 (3) Gen Ed Hum (3) Elective Recommend CHE & CRL 104	
YEAR 3 30-31 cr.	ESS 330 (3) ESS 347 (1 credit) ESS 370 (3) PHY 130 (4) & ESS 480 (1) ESS 302 (3)	ESS 331 Gen Ed "W" course (3) ESS 343 (3) Gen Ed SPK (3) ESS 405 (3) ESS 420 (3)	
YEAR 4 28 cr.	ESS 447 (1 credit) ESS 450 (3) Gen Ed Art (3) ESS Graduation Substitution (3)	Elective: recommend GEO 324 (3) ESS Graduation Substitution (3) Gen Ed Elective (3) Elective: Recommend PHY 140 (3-4) ESS Graduation Substitution (3)	
	Summer	Fall	Spring
YEAR 5 28 cr.	ESS 523 (3) ESS 596 (3)	ESS 547 (1) ESS 521 (3) ESS 549 or ESS 570 (3) ESS 5xx Elective (3)	ESS 536 or ESS 530 (3) ESS 5xx Elective (3) ESS 5xx Elective (3) ESS 602 (3)

APPROVED GENERAL EDUCATION COURSES

Behavioral and Social Sciences (6 cr from 2 areas):

Anthropology: ANT 101, ANT 102, ANT 103
 Economics: ECO 111, ECO 112, ECO 200
 Geography: GEO 101, GEO 103, GEO 200, GEO 214
 Government: PSC 100, PSC 101, PSC 213
 Psychology: PSY 100
 Sociology: SOC 200, SOC 240

Humanities (6 cr from 2 areas):

History: HIS 100, HIS 101, HIS 102, HIS 150, HIS 151, HIS 152, HIS 444
 Literature: LIT 100, LIT 165, LIT 219, LIT 220, CLS 165, CLS 260, CLS 261
 Philosophy: PHI 100, PHI 101, PHI 150, PHI 180, PHI 206, PHI 207, PHI 220, PHI 280

Arts (3 cr):

Art: ARH 101, ARH 103, ARH 104, ARH 210, ARH 211, ART 106, ART 111, ART 113, ART 228, ART 231
 Dance: DAN 132, DAN 133, DAN 134, DAN 135, DAN 136, DAN 137, DAN 138, DAN 150, DAN 210
 Film: FLM 200, EGE 405, ESP 305, ESP 309, GER 405, SPA 313
 Music: MDA 240, MHL 121, MHL 125, MHL 210, MHL 312, MHL 325, MTC 110
 Theatre: THA 101, THA 103, THA 212

Approved Graduate Substitution Courses

ESS 507 (Geology of the Solar System)
 ESS 523 (Field Geology)
 ESS 527 (Electron Microscopy)
 ESS 532 (Advanced Oceanography)
 ESS 535 (Remote Sensing)
 ESS 542 (Geophysics)
 ESS 544 (Geomorphology II)
 ESS 548 (International Field Studies)
 ESS 549 (Advanced Hydrogeology)
 ESS 555 (Intermediate Astronomy)
 ESS 562 (History of Astronomy)
 ESS 571 (Advanced Meteorology)
 ESS 580 (Special Problems)
 ESS 590 (Soils)
 ESS 591 (Independent Studies)
 ESS 594 (Geology of NW Nat'l Parks)
 ESS 595 (Geology of SW Nat'l Parks)
 ESS 596 (Earth Systems Science)

ACCELERATED B.S. GEOSCIENCE, GEOLOGY CONC. TO M.S. GEOSCIENCE PROGRAM

Name:	Major Declared Date:	Planned Grad Date:			
	CREDITS	COURSE	SEMESTER	GRADE	REP/W*
GENERAL EDUCATION REQUIREMENTS (36 CREDITS)					
WRT120	3				
WRT200, or 204, or 205, or 206, or 208, or 220	3				
SPK 208 OR 230	3				
DIVERSE COMMUNITIES "J" COURSE	3				
INTERDISCIPLINARY "I" COURSE (ESS/ENV/SCB 102)	FULFILLED BELOW				
BEHAVIOR & SOCIAL SCI. (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: ANT SOC PSY ECO GEO PSC)	3				
	3				
HUMANITIES (6 CREDITS FROM TWO OF THE FOLLOWING AREAS: LIT HIS PHI)	3				
	3				
ARTS: (ART CINEMATOGRAPHY MUSIC PHOTOGRAPHY THEATRE)	3				
STUDENT ELECTIVES (9 CREDITS)	3				
	3				
	3				
MATH AND COMPUTER SKILLS (9 OR 10 CREDITS)					
MAT 143 Brief Calculus, or MAT 161—Calculus I	3 or 4				
MAT 121 – Statistics	3				
ESS 321 - Geometrics, or (GEO 324 or GEO325) - GIS, or CSC 115 or higher - Computer Science	3				
SCIENCE COGNATES (8 CREDITS)					
Recommend BIO 110 – General Biology					
CHE 103 – General Chemistry I	3				
CRL 103 – Experimental General Chemistry I	1				
Recommend CHE 104 – General Chemistry II					
Recommend CRL 104 – Experimental General Chemistry II					
PHY 130 – General Physics I or PHY 170 – Physics I	4				
Recommend PHY 140 – General Physics II, or 180 – Physics II					
CORE REQUIREMENTS (30 CREDITS) – AND WHEN OFFERED					
ESS 101 – Introduction to Geology	3				
ESS 204 – Historical Geology – both semesters	3				
ESS 201 – Field Geology – both semesters	3				
ESS 301 – Environmental Geochemistry – spring	3				
ESS 302 – Mineralogy – fall (spring as needed)	3				
ESS 331 – Paleontology (W) – spring (fall as needed)	3				
ESS 343 – Geomorphology – spring (fall as needed)	3				
ESS 405 – Igneous and Metamorphic Petrology – spring	3				
ESS 420 – Structural Geology – spring	3				
ESS 450 – Sedimentology and Stratigraphy – fall	3				
ADDITIONAL REQUIRED COURSE (8 CREDITS)					
ESS/SCB/ENV 102 – Humans & the Environment (I) – both	3				
ESS 439 – Hydrogeology – spring	3				
ESS 347 – Seminar – fall	1				
ESS 447 – Seminar – fall	1				
GRADUATE ELECTIVE COURSES – CONSULT LIST ON BACK FOR AVAILABLE COURSES (MAXIMUM 9 CREDITS) ; OTHER ELECTIVES TO 120 CREDITS TOTAL					
ESS Graduate Substitution Course:	3				
ESS Graduate Substitution Course:	3				
ESS Graduate Substitution Course:	3				
Other 200-400 electives to achieve 120 credits:	19 or 20				

• 3 classes above must be "W" emphasis.

- "I" course cannot be applied as a distributive requirement (Science, Humanities, or Behavioral & Social Science)

ACCELERATED B.S. Geoscience, Geology Conc. To M.S. Geoscience
SUGGESTED sequence

	Fall	Spring
YEAR 1 30 cr.	ESS 101 (3) MAT 115 or 121 (3) WRT 120 (3) Gen Ed Soc/Behav (3) Gen Ed Elective (3)	MAT 121 or 115 (3) WRT 204 205 206 208 or 220 (3) Gen Ed Elective (3) Gen Ed Soc/Behav (3) ESS 204 or 201 Gen Ed "W" course (3)
YEAR 2 32-34 cr.	ESS 201 or 204 Gen Ed "W" (3) ESS Elective: Recommend GEO 324 (3) CHE CRL 103 (4) & ESS 480 (1) Gen Ed Hum (3) Gen Ed "J" course (3)	ESS 102 or SCB 210 "I" course (3) ESS 301 (3) MAT 131 or 161 (3 or 4) ESS 331 Gen Ed "W" course (3) Elective: Recommend CHE & CRL 104 (3-4)
YEAR 3 32-33 cr.	ESS 302 (3) ESS 347 (1) ESS 321, GEO 324/325, or CSC 115 (3) PHY 130 or 170 (4) & ESS 480 (1) Gen Ed Hum (3) ESS 302 (3)	ESS 343 (3) Gen Ed SPK (3) ESS 405 (3) ESS 420 (3) ESS 439 (3)
YEAR 4 28 cr.	ESS 447 (1) ESS 450 (3) Gen Ed Art (3) Gen Ed Elective (3) ESS Graduation Substitution (3)	Elective (3) ESS Graduation Substitution (3) Elective (3) Elective: Recommend PHY 140 (3-4) ESS Graduation Substitution (3)

	Summer	Fall	Spring
YEAR 5 28 cr.	ESS 523 (3) ESS 596 (3)	ESS 547 (1) ESS 523 (3) ESS 549 or ESS 570 (3) ESS 5xx Elective (3)	ESS 536 or ESS 530 (3) ESS 5xx Elective (3) ESS 5xx Elective (3) ESS 602 (3)

APPROVED GENERAL EDUCATION COURSES

Behavioral and Social Sciences (6 cr from 2 areas):

Anthropology: ANT 101, ANT 102, ANT 103
 Economics: ECO 111, ECO 112, ECO 200
 Geography: GEO 101, GEO 103, GEO 200, GEO 214
 Government: PSC 100, PSC 101, PSC 213
 Psychology: PSY 100
 Sociology: SOC 200, SOC 240

Humanities (6 cr from 2 areas):

History: HIS 100, HIS 101, HIS 102, HIS 150, HIS 151, HIS 152, HIS 444
 Literature: LIT 100, LIT 165, LIT 219, LIT 220, CLS 165, CLS 260, CLS 261
 Philosophy: PHI 100, PHI 101, PHI 150, PHI 180, PHI 206, PHI 207, PHI 220, PHI 280

Arts (3 cr):

Art: ARH 101, ARH 103, ARH 104, ARH 210, ARH 211, ART 106, ART 111, ART 113, ART 228, ART 231
 Dance: DAN 132, DAN 133, DAN 134, DAN 135, DAN 136, DAN 137, DAN 138, DAN 150, DAN 210
 Film: FLM 200, EGE 405, ESP 305, ESP 309, GER 405, SPA 313
 Music: MDA 240, MHL 121, MHL 125, MHL 210, MHL 312, MHL 325, MTC 110
 Theatre: THA 101, THA 103, THA 212

Approved Graduate Substitution Courses

ESS 507 (Geology of the Solar System)
 ESS 523 (Field Geology)
 ESS 527 (Electron Microscopy)
 ESS 532 (Advanced Oceanography)
 ESS 535 (Remote Sensing)
 ESS 542 (Geophysics)
 ESS 544 (Geomorphology II)
 ESS 548 (International Field Studies)
 ESS 549 (Advanced Hydrogeology)
 ESS 555 (Intermediate Astronomy)
 ESS 562 (History of Astronomy)
 ESS 571 (Advanced Meteorology)
 ESS 580 (Special Problems)
 ESS 590 (Soils)
 ESS 591 (Independent Studies)
 ESS 594 (Geology of NW Nat'l Parks)
 ESS 595 (Geology of SW Nat'l Parks)
 ESS 596 (Earth Systems Science)

FREQUENTLY ASKED QUESTIONS (FAQs)

1. Can I take an undergraduate course for graduate credit?

Yes! Complete the following form, and submit to the Registrar.

https://www.wcupa.edu/admissions/sch_dgr/documents/UndergraduateCreditGraduateCourse.pdf

2. What if I'm getting a grade below a C- in a course?

Withdraw if you are in danger of failing. The deadline is the end of Week 9 of the semester. **If you fail a course at WCU, you MUST repeat it at WCU.**

3. What if I can't pass a required course?

Talk with your advisor and petition the Department if needed. Petition the University if necessary.

4. What if you have a serious family/medical emergency?

Consider a term withdrawal. Contact Student Affairs for guidance. Don't let those grades go to F's!

5. What happens if I am on probation?

Meet with your advisor and complete the Academic Recovery Plan (online form).

6. What will make my resume stand out? How can I get into Graduate School? Get a job?

Here is a non-exhaustive list of opportunities to consider to separate yourself from your peers:

- Apply the 17-20 free elective credits toward a minor in many departments. Consult the list of suggested minors on page 12.
- Participate in research, including Independent Study (ESS 491)
 - Design your course with your research advisor; 1-3 credits; can be repeated for different projects/advisors. See Page 11 for details on how to enroll.
- Enroll in National or Int'l Field Courses, including National Student Exchange and Study Abroad
- Ask about Field Camp!
- Participate in internships, which can be applied as course credit (ESS 460). See Page 11 for details.
- Select your core courses toward passing the FG Exam. See Page 12 for details.
- Take ENV 230 (HAZWOPR course). It's a 40-hr course providing training required by OSHA and EPA to work sites where hazardous materials may be stored or used.

7. I'm ready to graduate. What do I do?

Make sure you have completed all requirements and have earned 120 credits! Read the comments about Graduation Clearances in MyWCU for your General Education requirements (done by the Registrar).

Apply for graduation one full year in advance online through myWCU. Click on the "Apply for Graduation link." **August graduates may participate in the May ceremony.** You can also change your graduation term using myWCU (you only pay once for graduation application). Caps and gowns can be retrieved at the WCU Bookstore.

the 1990s, the number of species in the world has increased by 150% (Mittermeier *et al.* 2004). The rate of species loss is estimated to be 100–1000 times greater than the rate of species discovery (Mittermeier *et al.* 2004). The loss of species is a major concern because of the potential impact on ecosystem stability and the loss of genetic diversity (Mittermeier *et al.* 2004).

One of the most serious threats to biodiversity is habitat loss and fragmentation (Mittermeier *et al.* 2004). Habitat loss is the result of human activities such as agriculture, logging, and urban development (Mittermeier *et al.* 2004). Habitat fragmentation is the result of human activities that divide large, continuous habitats into smaller, isolated patches (Mittermeier *et al.* 2004). Both habitat loss and fragmentation can lead to the loss of species (Mittermeier *et al.* 2004).

One of the most important factors in determining the impact of habitat loss and fragmentation on biodiversity is the size of the remaining habitat patches (Mittermeier *et al.* 2004). Small habitat patches are more likely to lose species than large habitat patches (Mittermeier *et al.* 2004). This is because small habitat patches have a higher edge-to-area ratio, which increases the risk of species extinction (Mittermeier *et al.* 2004). In addition, small habitat patches are more likely to be isolated, which reduces the ability of species to disperse and recolonize (Mittermeier *et al.* 2004).

Another important factor in determining the impact of habitat loss and fragmentation on biodiversity is the connectivity of the remaining habitat patches (Mittermeier *et al.* 2004). Habitat patches that are connected by corridors are more likely to support a higher number of species than isolated habitat patches (Mittermeier *et al.* 2004). This is because corridors allow species to disperse and recolonize (Mittermeier *et al.* 2004).

Finally, the impact of habitat loss and fragmentation on biodiversity is also influenced by the type of species that are affected (Mittermeier *et al.* 2004). Species that are highly dependent on large, continuous habitats are more likely to be lost than species that are more generalist (Mittermeier *et al.* 2004). In addition, species that are highly dependent on specific habitat features are more likely to be lost than species that are more generalist (Mittermeier *et al.* 2004).

In conclusion, habitat loss and fragmentation are major threats to biodiversity. The impact of habitat loss and fragmentation on biodiversity is influenced by the size of the remaining habitat patches, the connectivity of the remaining habitat patches, and the type of species that are affected. Conservation efforts should focus on protecting large, continuous habitats and maintaining the connectivity of remaining habitat patches. In addition, conservation efforts should focus on protecting species that are highly dependent on large, continuous habitats and species that are highly dependent on specific habitat features.