Kennesaw State University College of Science and Mathematics

ENVS 4900 – Environmental Science Capstone

Spring 2020 – 1 credit

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| **Class**: M, 9:05 – 9:55 AM, Math/Stat-112**Professor**: Dr. Dan Ferreira**Office Hours**: By appointment | **Office Location**: SC-339**Phone**: (470)578-5011**Email**: DFerreira@kennesaw.edu |

The environmental science capstone course is intended to help you integrate and apply some of the fundamental aspects of environmental science that you have learned in the various courses you have completed for this degree program. The course will force you to find interdisciplinary solutions to real-world problems potentially involving biology, chemistry, ecology, soil science, ethics, geology, and environmental policy. This course is intended to help prepare you for a career in an environmental field where this type of interdisciplinary synthesis of different scientific fields will likely be expected.

**Student Learning Outcomes – By the end of the semester, you should be able to:**

* Speak accurately and confidently concerning the application of core environmental science concepts to understand practical issues and problems facing practitioners of the discipline.
* Evaluate presentations on real-world environmental issues, identify problems, and work with a group of peers to address them
* Compare different approaches for dealing with environmental problems, determine which one is the most likely to result in success, and defend that decision.

**Core Concepts**

This course will test environmental science students’ ability to use what they have learned in the course of their degree program to understand and address real world issues. There are five core environmental science concepts that students will learn about throughout their coursework:

*1) Human interactions with the environment*

*2) Ecosystems*

*3) Evolution and biodiversity*

*4) Earth systems*

*5) Chemistry in the environment*

Students will need to synthesize the various material that they have learned in their classes around these five core environmental science concepts to interpret the presentations they attend and propose questions and solutions related to those presentations.

**Covid-19 Statement**

The health and safety of my students is my number one concern. I want to give every student the best educational experience that I can while keeping everyone safe from the spread of Covid-19. If any student feels ill with symptoms of Covid-19 such as fever or coughing, please do not come to lecture. If you have any symptoms of illness, please consult a medical professional and get tested for Covid-19. Failure to show up to lecture due to illness will not result in any negative repercussions to your grade. All I ask is that you email me prior to your scheduled meeting time to let me know that you will be missing class because you are sick.

As mandated by the University System of Georgia, the university requires the use of face masks in the classroom and in KSU buildingsto protect you, your classmates, and instructors.  Per the University System of Georgia, anyone not using a face covering when required will be asked to wear one or must leave the area. Repeated refusal to comply with the requirement may result in discipline through the applicable conduct code.

Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Please contact Student Disability Services at sds@kennesaw.edu for student accommodation requests.

**Course Norms:**

I want everyone to feel comfortable contributing their thoughts and ideas in lecture. In order to do that, we need an atmosphere of mutual respect between all members of the class. If you have questions about any of these policies or have special circumstances I should know about, please feel free to let me know. [KSU and Board of Regents policies can be found here](https://curriculum.kennesaw.edu/resources/federal_bor_ksu_student_policies.php). [Additional Student Resources can be found here](https://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php).

*Absences*: **Missing three or more classes throughout the course of the semester will result in an automatic failing grade in the course.** Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal.

*Makeup Assignments/Exams:* I will allow students to make up assignments that they miss for legitimate reasons, BUT ONLY WITH APPROPRIATE DOCUMENTATION. If you do not have official documentation of your reason for missing class (a doctor’s note, a hospital discharge form, an official request to be excused from a coach, etc) you will receive a zero grade on any work you miss. Documentation must be submitted within a reasonable time period (as determined by me) after the absence in order for the absence to be excused.

*Extra Credit*: There is **NO EXTRA CREDIT** in this class. The grade you receive will be calculated based on the criteria described below. If you wait until the last week of the semester to start worrying about your grade, I guarantee you that you will be disappointed.

*Electronic Devices (cell phones, PDAs, music players, etc.)*: Cell phones should be set to silent mode upon entering class. All other electronic devices must be turned off to maintain a respectful class atmosphere. You will be asked to leave if you disregard this requirement. If you wish to use a laptop in class, do not use the laptop for any purpose not related to the class (i.e. surfing the internet, playing games, etc). Such activities are distracting to everyone around you and seriously impact the ability of other students to learn. Repeated violations of this policy will result in you being banned from bringing a laptop to class in the future.

*Academic Honesty*: Every KSU student is responsible for upholding the provisions of the Student code of Conduct, as published in the Undergraduate and Graduate catalogs. The Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic malicious/intentional misuses of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Student Conduct and Academic Integrity department, which includes either an “Informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement

*Accommodations:* Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor immediately. Written verification from the [KSU Student Disability Services](http://www.kennesaw.edu/stu_dev/dsss/welcome.html) is required. No requirements exist that accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.Course requirements will not be waived, but accommodations will be made, when appropriate, to assist you to meet the requirements.

**Grading**

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| Quizzes – 5%Question Submissions – 15%Group Presentations – 60%Final Exam – 20%  | A B C DF | = 90 – 100= 80 - 89= 70 - 79= 60 - 69= 59 and below |

**Assignments**

**Questions**: No later than 24 hours before each discussion meeting, each student will submit a list of three questions based on the guest speaker’s lecture presented in the previous class. These questions should not focus on minutae such as terminology the student didn’t know or basic concepts the student didn’t understand. Questions should be about the **application of the fundamental concepts of environmental science to the issues that the speaker discussed**. Any question that can easily be answered with a 5 minute Google search is unacceptable. Questions should clearly demonstrate that the student is synthesizing core environmental science concepts and seeking a broader understanding of the issues being raised by the speaker. Do not expect to be able to come up with these three questions five minutes before they are due. You should plan on spending a significant amount of time considering the material from the lecture and how it connects to what you’ve learned in all the classes you have taken thus far.

Examples of good questions:

- Speaker X discussed the remediation of benzene pollution in the groundwater at a site in Canton, GA. The groundwater at the site was relatively shallow, and I’m curious how this project might have been performed differently if the contamination had been present in a deeper bedrock aquifer instead of a shallow overburden aquifer. [Linked the guest lecture to core concepts #4 and #5]

- Speaker Y talked about how EPD is trying to improve controls for erosion of soil by rain in urban Atlanta. How will these regulations need to change to deal with the increased frequency of heavy storm events brought on by climate change in the future? [Linked the guest lecture to core concepts #1 and #4]

- When Speaker Z talked about how spiny softshell turtles in North Georgia creeks are being threatened by development and destruction of their habitat, I wondered how the extinction of these turtles might affect the food web in those ecosystems and whether there are other species in neighboring ecosystems that might be able to fill that same ecological niche. [Linked the guest lecture to core concepts #2 and #3].

*Grading Rubric for 3 Question Assignment*

No Points: The question does not pertain to the issues raised by the speaker.

Minimal Points (0-20%): The question is pertinent to the guest speaker’s presentation but is superficial and demonstrates no connection between the presentation and core environmental science concepts.

Low Points (20-40% of available points): The question is pertinent, but displays only a superficial understanding of the issues presented and can be answered easily with very little effort.

Moderate Points (40-75% of available points): The question is both pertinent and displays that the student is applying core environmental concepts to the material presented by the guest speaker, but demonstrates a shallow understanding of the issues and concepts involved.

Maximum Points (75%-100%): The question is pertinent, applies core concepts of environmental science to the issues presented by the guest speaker at a deep level, and synthesizes the material, demonstrating that the student is connecting with multiple core concepts from the environmental science curriculum.

**Group Projects**: Employers expect potential employees to be able to work well in groups, regardless of what particular field they are in. These group projects will give you yet another chance to practice this valuable skill. At the end of each discussion lecture, students will be assigned to groups of 2-4 based on the questions that they submitted. Students with similar questions or questions that address the same content area will be grouped together. Each group will prepare a 15 to 20-minute presentation on their research and group discussion about the question they were assigned and their group’s recommendation for addressing the issue. The class will then have 3-5 minutes to ask questions.

*Grading Rubric for Group Presentation*

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|  | Poor (0-3) | Acceptable (4-7) | Superior (8-10) |
| Addressed Question | Failed to address question / off topic | Addressed question, but only surficially | Response demonstrates deeper understanding  |
| Tied in Core Concepts | Failed to incorporate ES core concepts | Integrated one core concept | Synthesized multiple core concepts |
| Justified Recommendation | No recommendation / recommendation irrelevant | Made recommendation but it is not completely justified | Recommendation is clearly justified based on core concepts |

**Course Outline (This schedule is subject to change as the semester progresses)**

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| **Date** | **Topic** | **Assignments Due** |
| 1/11 | Guest Lecture, Environmental Consulting: Nick Dasantos, Nova Environmental |  |
| 1/18\* | MARTIN LUTHER KING HOLIDAY |  |
| 1/25 | Discussion for Environmental Consulting Lecture | Quiz, 3 questions from lecture day before class |
| 2/1 | Presentation of Group Work on Environmental Consulting  | Group presentation on resolving issue in topic |
| 2/8 | Presentation of Group Work on Environmental Consulting | Group presentation on resolving issue in topic |
| 2/15 | Guest Lecture, Environmental Conservation: Georgia Conservancy |  |
| 2/22 | Discussion for Environmental Conservation Lecture | Quiz, 3 questions from lecture day before class |
| 3/1 | Presentation of Group Work on Environmental Conservation  | Group presentation on resolving issue in topic |
| 3/8\* | SPRING BREAK |  |
| 3/15 | Presentation of Group Work on Environmental Conservation  | Group presentation on resolving issue in topic |
| 3/22 | Guest Lecture, Environmental Regulation: Georgia EPD |  |
| 3/29 | Discussion for Environmental Regulation Lecture | Quiz, 3 questions from lecture day before class |
| 3/31 | Presentation of Group Work on Environmental Regulation | Group presentation on resolving issue in topic |
| 4/5 | Presentation of Group Work on Environmental Regulation | Group presentation on resolving issue in topic |
| 4/12 | Lab / Field Practical Assessment |  |
| 4/19 | Pre-Post Test Assessment |  |
| 4/26 | Concluding Lecture, Q&A Session |  |

**Important Dates**

January 15: Last day of drop/add

January 18: Martin Luther King Jr. Day holiday

March 3: Last day to withdraw

March 8 – 14: Spring Break

May 3: Last day of classes