NRM 5302 – ECOLOGICAL MODELING
Dept. of Natural Resource Management, Sul Ross State University
Fall 2019 – Course Syllabus

Instructor:
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Course Description:
An introduction to the philosophy, theory, and practical application of systems analysis and simulation modeling on ecological systems.

Course Objectives:
Students will be introduced to the general concepts of systems analysis and ecological simulation modeling. Specifically, upon course completion students shall understand:

- The theory and philosophy of systems analysis.
- The practical application of systems thinking in problem solving.
- How to create compartmental models that represent ecological systems.
- The use of simulation modeling as a tool to answer complex ecological questions.
- The use of STELLA software and its application in the management of ecological systems.

Textbook (Not required):
Grant, W. E., and T. M. Swannack. 2008. Ecological Modeling: A Common-Sense Approach to Theory and Practice. Blackwell Publishing, Malden, MA, USA.

Course Outline:
Systems Analysis and Simulation Modeling using Stella software

- Systems analysis and "thinking"
- Using STELLA software
- Creating ecological simulation models

Grading:

Discussion & Participation	10%
Quizzes	10%
Assignments / Labs	15%
Midterm Exam	20%
Mid Term Model Presentation	15%
Final Model Presentation & Paper	30%
TOTAL	100%

Scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, <60% = F

Course Requirements:

Discussion and Participation

- Class discussions will be based on assigned readings and lab exercises. Your participation in these discussions will be graded based on the quality of your contributions and level of preparation. Participation will also include attendance in class. Because the class only meets one day a week, attendance is essential. There are 15 regular class days and students will be allowed 2 "explained" absences. Additional absences will result in a 5% reduction in your grade (e.g., 3 absences = -5%, 4 absences = -10%, etc). Students will only be counted as "present" in class if they attend the entire class period (2-4:50).

Assignments

- Class assignments will consist of various modeling exercises that will be worked on in class. All assignments are to be completed during the scheduled class period unless special permission is given by instructor.

Model Outline and Presentation

- Each student will develop a model of an ecological system of his/her choice which will be used to answer a specific management question or conservation problem using STELLA software. Students will write a detailed summary of the problem and model and will also present this outline in class. Paper should be written in Journal of Wildlife Management format.

Final Model Presentation and Paper

- Students will present their final models to the class in a formal presentation. Students will also meet individually with the instructor to discuss their model and paper. Students will write and turn in a paper (Journal of Wildlife Management format) with the intention of submitting for publication.

Late Work

Students' class attendance and participation are required. No emailed assignments will be accepted. No consideration of extending a due date will be considered on the day an assignment is due, students should contact the instructor if they are expecting to be unable to meet a deadline. All late assignments will be assessed a 100% deduction if they are late; no assignments will be accepted after the due days. Any time instruction is missed, for any reason, it will count as an absence. College approved field trips, and competitive and leadership development events (with prior instructor approval) are considered legitimate and with proper documentation will not be considered an absence. Seeking an extended deadline due to the above mentioned absences should be arranged before missing the course meeting. In case of emergencies, arrangements for completing assignments should be made immediately upon return to campus.

Use of technology during instruction

This class is the beginning of your journey to becoming a professional, and the use of personal cell phones, iPads, computers, and other electronic devices can distract learning for all individuals and create an unprofessional environment. However, electronic devices can also be powerful tools to be used in the learning process. Therefore, the use of electronic devices for class purposes, such as note-taking and internet searches is allowed. But, remember that you are now a professional and will be required to act accordingly. So, if you choose to use electronic devices in the classroom, do so in a professional manner.

Academic Integrity
Students are expected to submit original work without unauthorized assistance. Academic dishonesty, which includes cheating, unauthorized collaboration, plagiarism, fabrication, multiple submissions, and aiding and abetting, will result in a grade of 0 on the work in question. Subsequent instances of academic dishonesty may result in more serious sanctions.

"The University expects all students to engage in all academic pursuits in a manner that is beyond reproach and to maintain complete honesty and integrity in the academic experiences both in and out of their classroom. The University may initiate disciplinary proceedings against a student accused of any form of academic dishonesty, including but not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials."
--Excerpt from the Student Handbook

Academic Dishonesty:
Academic dishonesty includes copying, sharing, or obtaining information from an unauthorized source, attempting to take credit for the intellectual work of another person, falsifying information, and giving or receiving information about a test, quiz, or assignment to other students. Any student involved in academic dishonesty will receive no credit (0) for work done and/or may be penalized in accordance with published University Rules.

Counseling and Accessibility Services:
Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartze, M. Ed., L.P.C., in Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8691. E-mail: mschwartze@sulross.edu.

Distance Education Statement:
Students enrolled in distance education courses have equal access to the university's academic support services, library resources, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should submit online assignments through Blackboard, which require secure login information to verify students' identities and to protect students' information. The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.

Additional Outcome Objectives as Required by the Southern Association of Colleges and Schools:
Student Learning Outcomes for the M.S. in Natural Resource Management

1. Students will be able to apply statistical concepts and procedures to research.
2. Students will be able to evaluate literature and references to substantiate the applied research project.
3. Students will be able to justify and defend research questions and design.

Student Learning Outcomes for the M.Ag. in Natural Resource Management.

1. Students will be able to apply statistical concepts and procedures to natural resource data.
2. Students will be able to evaluate literature and references as they apply to the natural resource field
3. Students will be able to demonstrate their knowledge of the fundamentals and advanced concepts of range and wildlife management.

NRM 5302 - Ecological Modeling
Fall 2019 - Tentative Schedule

Week	Date	General Topic
Week 1	8/27	Syllabus/Class Introduction
Week 2	9/3	Models and Systems Thinking
Week 3	9/10	STELLA Program
Week 4	9/17	Model Design
Week 5	9/24	Validation & Verification
Week 6	10/1	Common pitfalls and Reflections
Week 7	**10/8**	**Student Model Outline Presentations**
Week 8	**10/15**	**Midterm Exam**
Week 9	10/22	Scale
Week 10	10/29	Uncertainty
Week 11	11/5	Conclusions
Week 12	11/12	Student Modeling Projects
Week 13	11/19	Student Modeling Projects
Week 14	11/26	Student Modeling Projects
Week 15	**12/3**	**Student Presentations and Papers Due**
Finals week		No final exam/Makeup day