

NRM 5302 – ECOLOGICAL MODELING
Fall 2015 – 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:

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	20%
Assignments	15%
Midterm Exam	20%
Conceptual Model Presentation	15%
Final Model Presentation & Paper	30%
<hr/> TOTAL	<hr/> 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 Ecological Modelling journal 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 (Ecological Modelling journal format) with the intention of submitting for publication. Additional details will be given in class.

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:

It is Sul Ross State University Policy to provide reasonable accommodation to students with disabilities. If you would like to request such accommodations because of physical, mental, or learning disability, please contact the Counseling and Accessibility Services in Ferguson Hall (room 112) or call 432 837-8203.

Additional Outcome Objectives as Required by the Southern Association of Colleges and Schools:

Program Learning Outcomes for the M.Agr. in Range and Wildlife Management

The graduating student will demonstrate that he/she is able to:

1. Apply statistical concepts and procedures to natural resource data
2. Evaluate literature and references as they apply to the natural resource field
3. Demonstrate their knowledge of the fundamentals and advanced concepts of range and wildlife management.

Program Learning Outcomes for the M.S. in Range and Wildlife Management

The graduating student will demonstrate that he/she is able to:

1. Apply statistical concepts and procedures to natural resource data
2. Evaluate literature and references to substantiate an applied research project.
3. Examine, select, and utilize appropriate resources, materials, and data collection instruments to implement research projects.
4. Justify and defend the research questions and design.

NRM 5302 - Ecological Modeling
Fall 2015 - Tentative Schedule

Week	Date	General Topic
Week 1	8/25	Syllabus/Class Introduction
Week 2	9/1	Common-Sense Solutions <i>Ch 1-2 - Three Exercises</i>
Week 3	9/8	Modeling Theory <i>Ch 3 - Conceptual Model</i>
Week 4	9/15	Modeling Theory <i>Ch 4 - Quantitative Model</i>
Week 5	9/22	Modeling Theory <i>Ch 5 - Model Evaluation</i>
Week 6	9/29	Modeling Theory <i>Ch 6 - Model Application</i>
Week 7	10/6	Student Model Outline Presentations
Week 8	10/13	Midterm Exam
Week 9	10/20	Modeling Practice <i>Ch 7 - Common Pitfalls</i>
Week 10	10/27	Modeling Practice <i>Ch 8 - Modeling Process in Practice</i>
Week 11	11/3	Theory, Practice, and Common Sense <i>Ch 9 - Problems</i>
Week 12	11/10	Theory, Practice, and Common Sense <i>Ch 10 - Reflections</i>
Week 13	11/17	Student Modeling Projects <i>Meet with instructor and work on models</i>
Week 14	11/24	Student Modeling Projects <i>Meet with instructor and work on models</i>
Week 15	12/1	Student Presentations and Papers Due
Finals week	12/8	No final exam/Makeup day