Academic Assessment Plan

University of Florida

Academic Affairs

Academic Colleges

College of Engineering

Certificates

Biological Systems Modeling

Biological Systems Modeling
Provide graduate level instruction to engineering and science students interested in biological systems modeling techniques.

Responsible Roles: Associate Professor (Kiker, Gregory)
Program: Biological Systems Modeling
Progress:

PG1: Program Goal Biological Systems Modeling
To educate graduate students and professionals with respect to the fundamental and technical aspects of biological systems modeling.

Evaluation Method
Successful completion of two required graduate courses in Biological Systems Modeling and two approved elective graduate courses. Successful completion of a course entails a course grade of C or higher.

Responsible Role: Associate Professor (Kiker, Gregory)
Progress: Ongoing

SLO1: Students draw and build a conceptual model
Students draw and build a conceptual model.

SLO Area (select one): Knowledge (Grad)
Responsible Role: Associate Professor (Kiker, Gregory)
Progress: Ongoing

Assessment Method
A report which demonstrate the application of two conceptual model design methods (Forrester Diagrams and Soft-Systems Analysis) will be presented at the end of required Tier I course (SLO 1). Successful completion of an assignment with a c grade or better.

SLO2: Students program computer models in a high-level language to implement biological systems algorithms.
Students program computer models in a high-level language to implement biological systems algorithms.

SLO Area (select one): Skills (Grad)
Responsible Role: Associate Professor (Kiker, Gregory)
Progress: Ongoing

Assessment Method
The student will learn and apply the R programming environment and the high level languages (FORTRAN, BASIC,C++ or Java) through three assignments in the Tier I course for the application of Euler, Modified Euler and Runge-Kutta algorithms in biological systems (SLO 2). Successful completion of an assignment with a c grade or better.

SLO3: Students evaluate biological systems models
Students evaluate biological systems models.

SLO Area (select one): Knowledge (Grad)
Responsible Role:
Progress: Ongoing

Assessment Method
Model evaluation techniques (validation, optimization, global sensitivity, and uncertainty analysis) will be applied to evaluate biological systems models in the required Tier II course. (SLO 3). Successful completion of an assignment with a c grade or better.

SLO4: Students apply and evaluate a computer model of a biological system
Students apply and evaluate a computer model of a biological system.

SLO Area (select one): Skills (Grad)
Responsible Role:
Progress: Ongoing

Assessment Method
A final project in the selected Tier III project dealing with application of a biological systems model to a particular specialty will be presented to the Faculty Certificate Committee as a requirement for graduation from the Biological Systems Modeling Certificate (SLO 4). Successful completion of an assignment with a c grade or better.

Biological Systems Modeling
Start: 7/1/2016
End: 6/30/2017
Progress: Ongoing
Providing Department: Biological Systems Modeling
Responsible Roles: Associate Professor (Kiker, Gregory)

Research (Graduate and Professional AAPs only)

Assessment Timeline (Graduate and Professional AAPs only)

Curriculum Map (UG AAPs only)

Assessment Cycle (All AAPs)
Analysis and Interpretation: June - August of each academic year

Improvement Actions: Completed by November of each academic year

Dissemination: Completed by December of each academic year

Methods and Procedures (UG and Certificate AAPs)

SLO	Assessment Method	Delivery Mode
1. Students draw and build a conceptual model.	Report and Technical Analysis Assignment	UF Course Management System
2. Students program computer models in a high-level language to implement biological systems algorithms.	Development of computer code, simulation and technical report	UF Course Management System
3. Students evaluate biological systems models.	Use of model evaluation tools with resulting technical report.	UF Course Management System
4. Students apply and evaluate a computer model to a biological system	Integrative report and presentation	UF Course Management System

SLO Assessment Rubric (All AAPs)

Performance Indicators

	Unsatisfactory - Needs Improvement	Meet Expectations	Above Expectations	Exceptional
Spelling and Grammar **(0 – 10 points)**	(0-10 points) There are many spelling and grammar mistakes in the assignment.	(10-15 points) There are one or two spelling and grammar mistakes in the assignment. Some of the sections could be improved with respect to language usage	(15-18 points) There are no spelling or grammar mistakes.	(19-20 points) the spelling and grammar in this SOW should be used as example to future classes.
Technical Detail and Clarity of Forester Diagram Method **(0 – 40 points)**	(0-20 points) The logic and reasoning behind the diagrams are inconsistent and unclear. It is difficult to follow how the system is organized or how systems flows are organized.	(20-30 points) The logic and flow in the diagrams are generally clear with a few small inconsistencies	(30-35 points) The logic and reasoning in the text and diagrams are solid. I can follow the plan of work without difficulty.	(35-40 points) The logic and reasoning in the diagrams and text are easy to follow with strong detail and consistency. The author has laid out a clear and compelling systems description.
Technical Detail and Clarity of Soft Systems Analysis (SSA) **(0 – 40 points)**	(0-20 points) The logic and reasoning behind the SSA diagrams and process are inconsistent and unclear. It is difficult to follow how the system is organized or how SSA methodology was used.	(20-30 points) The use of SSA (in diagram and methods) is generally clear with a few small inconsistencies	(30-35 points) The soft Systems Analysis is complete and clear in its use of text and diagrams. I can follow the logic without difficulty.	(35-40 points) The SSA was clearly and successfully used with strong detail and consistency. The author has laid out a clear and compelling systems description.
Professional Style **(0 – 10 points)**	(0-10 points) The style of the not professional. It did not appear that the author has spent much time on this.	(10-15 points) The look and feel of the assignment was adequate and somewhat professional. There are sections in the layout and delivery that could be improved	(15-18 points) The text and diagrams were presented in a clear and professional style.	(19-20 points) The entire assignment was presented in a clear, professional and interesting style. Several elements in the document were original, surprising and compelling.

Measurement Tools (Graduate and Professional AAPs Only)

Assessment Oversight (All AAPs)
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Academic Assessment Plan Entry Complete: ☑