COURSE DESCRIPTION
MATHEMATICAL MODELLING
MA 361-3B,
SPRING 2015

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Carmeliza Navasca
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Office Hours: Mon Wed 12:00–1:00 pm, 4:30–5:30 pm (or by appointment)

Course Info

Meeting times: Mon Wed, 5:30-6:45 PM
Meeting location: HHB 221
Prerequisite: Grade of C or better in MA 123 or MA 125 equivalent. *Any student who has not fulfilled the prerequisite will be dropped from the class.*
Credits: 3 semester hours
Recommended Textbook: (1) *Mathematical Models: Mechanical Vibrations, Population Dynamics and Traffic Flow,* by Richard Haberman, SIAM, 1998
(2) *Climate Change and Climate Modeling,* by J. David Neelin, Cambridge, 2011
(3) *Mathematical Modeling of Biological Processes,* by Avner Friedman and Chiu-Yen Kao, Springer, 2014

Important Dates

First day of our class: January 5, 2015
Last day to drop without paying full tuition: January 12, 2015
Spring Break: March 23-27, 2015
Last day to withdraw with a "W": March 30, 2015
Last day of our class: April 17, 2015
Final Project: Wed, April 22, 2015

Course Policies

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If your are contacted by the Early Alert Program, you should consider taking advantage of the services it offers. Various services to assist you are also listed in the *Student Resources* section of the *Blazernet* (`http://uab.edu/blazernet`) website.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at *dss@uab.edu*.

Date: January 5, 2015.

Course Description

Mathematical modeling using computer software; connections to calculus and systems of ordinary differential equations are emphasized. Students translate verbal descriptions into mathematical form using appropriate units and reasonable relationships, construct and interpret multiple representations of mathematical relationships, including tabular, graphical, and schematic, use quantitative evidence produced by models as a basis for reasoned argument to unambiguous conclusions, communicate the mathematical structure of models appropriately to an audience in written form, using proper grammar, usage, spelling, and mathematical modeling conventions of language.

Objectives of the Course

Upon successful completion of the course, a student

(1) develops the understanding of how the mathematical equations describe phenomena we see in engineering and science applications as well as biological applications
(2) develops mathematical tools and implements algorithms from a given mathematical modeling problem;
(3) learns the basic principles of mathematical modeling, i.e. solving differential equations and other mathematical equations and using algorithms and software tools for science, math and engineering problems

Class Management via canvas

- Homework and project assignments will be posted in canvas (`http://www.uab.edu/online/canvas`).
- Canvas will be used to post important handouts, class announcements, codes, grades and etc. Students should log in to canvas at least once a week!

Assessment Procedures

- Student achievement will be assessed by the following measures:
  - **Weekly homework.** Homework will be due weekly. There will be no extension of deadlines for any reason. Homework contributes 25% to the course average.
  - **Attendance and quizzes.** Quiz problems are similar to the homework problem sets. Typically, the quizzes are each ten minutes long with one or two problems. Quizzes and attendance contribute 15% to the course average.
  - **Three projects.** The project 1, project 2, and project 3 are worth 8%, 12% and 15%, respectively.
  - **Final project.** The final contributes 25% to the course average.

  Grading Scheme: 25% homework, 15% attendance & quiz, 8% project 1, 12% project 2, 15% project 3, 25% final project

- Your course performance is your course average (including the final exam score). This is a number between 0 and 100.

- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F

Tips

- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

Academic Honor Code

UAB Faculty expects all members of its academic community to function according to the highest ethical and professional standards. Academic dishonesty and misconduct includes, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation. Candidates are expected to honor the UAB Honor Code as detailed in the most current UAB Student Catalog. Please consult this resource for additional information regarding the specific procedures to be undertaken when a student violates the UAB Honor Code. See `http://www.uab.edu/students/academics/honor-code`

Non-harassment, Hostile Work/Class Environment

The UAB College of Arts and Sciences expects students to treat fellow students, their Course Instructors, other UAB faculty, and staff as adults and with respect. No form of hostile environment or harassment will be tolerated by any student or employee.