MATH 689/001 (Fall 2009)
Topics in Applied Mathematics

Instructor: Padmanabhan Seshaiyer
Office: Math 222B, Phone: (703) 993-9787
Class Time: W 7:20pm – 10pm
Venue: Science and Tech I, Room 242
Office hours: W 5:00pm – 6:30pm and by appointment
email: pseshaiy@gmu.edu
website: http://www.math.gmu.edu/~pseshaiy/F09/m689/689f09.html

About the course: This class will cover the application of numerical/analytical techniques and
the application of computational methods for PDES to understand and solve problems that arise
in multidisciplinary applications. Specifically, the plan is to teach students to (a) Develop the
ability to mathematically formulate problems from a nonmathematical description; (b) Identify
features relevant to a model and be able to analyze the model using analytical techniques and (c)
Perform simulations using state-of-the-art mathematical software such as MATLAB to interpret the
results and suggest recommendations. In summary, the primary goal of the course will be employ
the philosophy of “here is the problem, find the mathematics to solve it” rather than “here is
the mathematics, use it to solve the problem”. This course will provide a unique experience of
how numerical/analytical techniques will be applied outside academia and also broaden the horizon
beyond what is usually presented in graduate education.

Text: There will not be a particular textbook that will be used for the course. Instead, lecture
notes will be updated on the course website or provided to the students on a regular basis as the
semester progresses. A good reference textbook that is recommended for the class will be Classical
and Modern Numerical Analysis: Theory, Methods and Practice by A. Ackleh, E. Allen,

Grading: Your grade for this course will be based on homeworks, projects, presentations and
participation in the class. More specifically, homeworks and projects given during the semester will
total 50% of your grade. Completed projects must be written in the form of a journal publication
including statement of the problem, background and methods used for the solution and interpretation
of the results. Students must also prepare for inclass presentations based on their homework or
projects which will be worth 20%. There will be one final exam worth 30% that will be based on the
various mathematical techniques presented in the class during the semester.

Academic Integrity: All students will be expected to abide by the Honor Code:
Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters
related to academic work.

Disability Accomodation: Any student who, because of a disability, may require some special
arrangements in order to meet course requirements should contact the instructor as soon as possible
to make such accomodations as may be necessary.

Good Luck and please feel free to contact me if you have any questions.