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Text: See list of references on home page.
332 Home Page: <http://ocho.uwaterloo.ca/~pfieguth/Teaching/teaching.html>

Class Times: MWF 1:30 – 2:20 E5-6006
Tutorials: Fri 12:30 – 1:20 E5-6002, every week

Office Hours: See home page

Course Grading:

- 35% Four numerical assignments, exploring practical aspects of four different parts of the course. These assignments are to be done individually.
- 20% A modest project, a case study involving two or more of mathematics, earth science, monitoring / inverse problems, and policy. This project is to be done in groups of two students, and will be due towards the end of the term.
- 5% A short presentation, in-class, based on the project case study.
- 40% Final exam
(Final exams with grades below 50% may be weighted more heavily in the course grade.)

Course Outline: (See home page for more detailed breakdown and additional information)

At a high level, we wish to better understand the earth system and its interaction with human society. This leads to four areas of discussion:

1. Mathematics and Modeling
2. The Science of the Physical World
3. Earth Monitoring and Inverse Systems
4. The Human World and Related Policy

In terms of mathematics and modeling, I wish to look at five topics:

1. Systems theory, open and closed systems
2. Nonlinear systems
3. Complex systems, self-organizing criticality, cellular automata
4. Heavy-tailed or power-law distributions, long time-constant problems
5. Partial differential equations

Students should consult the course home page for books held on library reserve, on-line resources, a tutorial schedule, and other updates.

Cheating and Plagiarism: Students are expected to know what constitutes academic integrity. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71.

The following text has been written by the University of Waterloo, not by the course instructor:

The following statements MUST be included in all course outlines and/or websites:

Academic Integrity:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

Check www.uwaterloo.ca/academicintegrity/ for more information.

Grievance:

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline:

A student is expected to know what constitutes academic integrity (www.uwaterloo.ca/academicintegrity/) to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean.

For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Appeals:

A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground.

A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for Students with Disabilities:

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.