GEO585: Hydrologic Modeling  
Spring 2019  
University of Montana  
Instructor: Marco Maneta  
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Office: CHCB 348  
Phone: 406-243-2454  
Class meetings: Monday-Wednesday 10:10pm-11:30pm  

Note: This Course has a Moodle Site. Additional reading material, problems sets and other information will be posted there with frequent updates, so check the site often.  

Overarching goals:  

- Inverse modeling, calibration, and sensitivity analysis using advanced research tools  
- Advanced topics in forward computer modeling and model analysis.  

Ancillary goals: Along with the overarching goals, in this course we will revisit some linear algebra, probability, and optimization concepts necessary to understand the contents of the course and to understand the scientific literature. We will also run computer models and get familiar with data pre- and post-processing tools.

Prerequisites: Interest in quantitative modeling of environmental processes and comfort with computers, calculus, physics and algebra.

Office hours: Office hours will be the next hour after class.

Grades: 60% Individual project; 40% class activities

Text books:

- Optimization:  
    * The 2nd edition of this book is available online at the UM Mansfield library (free of charge)  
    * There is an number of errata in the 2nd edition. Make sure you also get the document with the list of corrections in the publisher’s webpage

Recommended books:  

- Linear Algebra:  
  - Noble and Daniel. Applied linear algebra. 2nd edition

- Inverse modeling  

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<th>Date</th>
<th>Topic</th>
<th>Activity</th>
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<tr>
<td>01/14/19</td>
<td>Overview and Intro to Modeling</td>
<td>Python Practice Set</td>
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<tr>
<td>01/16/19</td>
<td>Spatially distributed models</td>
<td>Ech2o case study</td>
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<td>01/21/19</td>
<td>No class (MLK)</td>
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<tr>
<td>01/23/19</td>
<td>Spatially distributed models</td>
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<td>01/28/19</td>
<td>Review of linear algebra and calculus</td>
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<tr>
<td>01/30/19</td>
<td>Review of linear algebra and calculus</td>
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<td>02/04/19</td>
<td>Taylor Series expansions</td>
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POLICIES

Emailing  We may occasionally conduct email correspondence with class members and we will use official UM email addresses. All email sent to us must originate from your official UM email address (email originating from non-UM addresses will not be read or responded to). Sorry, but this is the law we are required to follow.

Attendance  No formal attendance will be taken. However, the format of this course requires class attendance for success. Substantial course content (i.e., graded in-class exercises and discussions) and information transfer will only occur in class. We cannot accommodate individual make-ups for missed classes. This is not a good course for you if it is not possible for you to always attend class sessions.

Due dates  All assignments are due at the start of class on designated due date.

Disabilities  The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Conduct Code  All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: http://www.umt.edu/vpsa/policies/student_conduct.php