New Course Request

Check Appropriate Boxes: Undergraduate credit X Graduate credit □ Professional credit □

1. School/Division: CLAS
2. Academic Subject Code: GEOL

3. Course Number: G451 (must be cleared with University Enrollment Services)
4. Instructor: H. Scott

5. Course Title: Principles of Hydrogeology
   Recommended Abbreviation (Optional): (Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2007

7. Credit Hours: Fixed at 3.0 or Variable from _________ to _________

8. Is this course to be graded S-F (only)? Yes □ No X

9. Is variable title approval being requested? Yes □ No X

10. Course description (not to exceed 50 words) for Bulletin publication: G451 Principles of Hydrogeology (3 cr.)
P: G106, M216, or consent of instructor. Physical and chemical properties of water; chemical equilibria and stable isotopes in groundwaters; acid drainage, landfills, and agricultural pollution; Darcy's Law, fluid potential, unsaturated flow; fluid and aquifer properties affecting groundwater flow; fluid mass-balance equation and its application; contaminant transport.

11. Lecture Contact Hours: Fixed at 3.0 or Variable from _________ to _________

12. Non-Lecture Contact Hours: Fixed at _________ or Variable from _________ to _________

13. Estimated enrollment: _________ of which _________ percent are expected to be graduate students.

14. Frequency of scheduling: every 2 yrs. Will this course be required for majors? N/A

15. Justification for new course: expand course choices in geology, in response to student demand

16. Are the necessary reading materials currently available in the appropriate library? yes

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: __________________________ Date: 3/8/2007
Department Chairman, Division Director

Approved by: __________________________ Date: 4/30/07
Dean

_________________________ Date: ______________
Chancellor/Vice-President

_________________________ Date: ______________
University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.
GEOL G451: Principles of Hydrogeology

Syllabus

Instructor: Dr. Henry P. Scott, Assistant Professor, Department of Physics and Astronomy, IUSB

Contact: E-mail is the best way to get hold of me outside of class or office hours. I prefer that you use my IUSB e-mail address (hpscott@iusb.edu); please provide a meaningful subject line starting with G451 (e.g. G451: Homework Question). I will hold official office hours on Tues. and Wed. from 10:00 - 11:15 AM, but I am more than happy to schedule additional time. You are also welcome to just stop by, and unless I’ve got a deadline approaching I will do my best to help you. My office is 345 Northside Hall and my number is 520-5527.

Course Description (3 cr): This course will introduce the hydrologic cycle, groundwater flow concepts, physical and chemical properties of aquifers and groundwater, geologic controls on heterogeneity and anisotropy, aquifers and aquitards in geologic systems, well flow, groundwater geochemistry, isotopes, and contamination.

Required Text:

Course Requirements and Evaluation: Your grade will be based on writing exercises and other assignments (30%) and exams (70%). There will be three exams, including the Final, which will be equally weighted. Make-up exams and quizzes will not be allowed unless you have a documented emergency.

Written Assignments: All written assignments must be typed, in your own words and should reflect a synthesis of information you’ve gathered: not merely a reproduction of a particular reference. Plagiarized text will not be tolerated. All must be submitted electronically.

Formatting: Written assignments use 1" margins, 12 pt font and double spacing. You should also include an appropriate title. In the upper left hand corner, include your name, class number, assignment number (e.g., W4) and date. Internal citations should be used where appropriate and in such cases your essay should include a works cited page.

Tentative Schedule: A tentative schedule of lecture and discussion topics is posted online; however, this will almost certainly change as we make our way through the semester. Check the online schedule frequently to see the latest incarnation.

Grading Scale: Letter grades will be given based on the following scale: 100-90% = A, 89-80% = B, 79-70% = C, 69-60% = D, and <60% = F. The designation of +/- may be added to the final grade at my discretion. Extra credit will not be available.

Academic Integrity: I follow the guidelines for the Student Code of Conduct in terms of academic dishonesty, i.e. No Cheating!

Accommodations: Any student who feels that an accommodation may be needed based on the impact of a disability should contact Disabled Student Services at 520-4135 in office 148 of the Administration Building. Staff will work to coordinate reasonable accommodations for students with documented disabilities.
# GEOL G451: Principles of Hydrogeology

## Lecture Schedule and Notes

<table>
<thead>
<tr>
<th>Week #</th>
<th>Starting Date</th>
<th>Lecture Notes</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Motivation to Study Hydrogeology and Basic Hydrologic Properties</td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td>Basic Principles of Ground-water Flow: Porosity, Hydraulic Gradient and Conductivity, and Darcy's Law</td>
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<td>3</td>
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<td>Geology of Ground-water Storage</td>
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<td>4</td>
<td></td>
<td></td>
<td>Theory of Ground-water Flow: Differential Equations, Boundary Conditions, and Flownets</td>
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<td>5</td>
<td></td>
<td></td>
<td>Theory of Ground-water Flow: Flow in Unsaturated Zones and Fractured Media, Infiltration and Evapotranspiration</td>
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<td>6</td>
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<td></td>
<td>Practical Hydrogeology: Drilling, Piezometers, and Geophysical Techniques</td>
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<td>7</td>
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<td>Regional Flow</td>
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<td>8</td>
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<td>Confined Aquifers: Response to Pumping, Leaky Aquifers and Partially Penetrating Wells</td>
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<td>9</td>
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<td>Well pumping and response, slug, step and intermittent tests</td>
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<td>10</td>
<td></td>
<td></td>
<td>Ground-water Chemistry: Kinetic and Equilibrium Reactions and Dissolved Mass</td>
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<td>11</td>
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<td>Ground-water Chemistry: Key Reactions</td>
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<td>12</td>
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<td>Ground-water Chemistry: Geochemistry of Natural waters</td>
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<td>13</td>
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<td>Ground-water Chemistry: Isotopes and Age Dating</td>
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<tr>
<td>14</td>
<td></td>
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<td>Mass Transport, Advection and Dispersion</td>
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<tr>
<td>15</td>
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<td>Contaminant Hydrogeology</td>
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<tr>
<td>16</td>
<td>Final Exam</td>
<td>Date to be determined</td>
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</tbody>
</table>
Principles of Hydrogeology (3 cr) P: C106, M212 or M216
Physical and chemical properties of water; chemical equilibria and
stable isotopes in groundwaters; acid drainage, landfills, and
agricultural pollution; Darcy's Law, fluid potential, unsaturated
flow; fluid and aquifer properties affecting groundwater flow; fluid
mass-balance equation and its application; contaminant transport.
Course Listing: PRINCIPLES OF HYDROGEOLOGY
Spring 2006, Bloomington

How to find the class number

ENG-W 131 ELEMENTARY COMPOSITION 1 (3 CR)
14848 08:00A-09:15A TR CA 349 Stahl N

Class Number
Enrollment Info

Maximum
Enrollment
Avail
Waitlist

RSTR = Class Restricted (Class, School, Major, Prerequisite Required, etc.)
PERM = Class requires Student Permission from Course Department
VT = Variable Title
CLSD = Class closed
***** = Class is "related" to another enrollment class. See detail above.

Information on this report reflects data as of the end of the day Thursday, June 08, 2006

Select another GEOL course | Select another department

GEOL-G 451 PRINCIPLES OF HYDROGEOLOGY (3 CR)
25016 09:30A-10:45A TR GY 447 Zhu C

30 22 0

This page was generated by a script written by Ryan K. Varick.
DEPARTMENT AND DIVISION: Physics & Astronomy / Liberal Arts and Sciences

CHANGE REQUESTED: New Course (to IU South Bend campus): GEOL-G451 Principles of Hydrogeology

SIGNATURES

DEPARTMENT CHAIR

Jerry D. Hinnefeld


DIVISION CURRICULUM COMMITTEE CHAIR

DATE 4/26/07

ASSOCIATE DEAN

DATE 4/30/07

SENATE CURRICULUM COMMITTEE CHAIR

DATE 5/24/07

ASSOCIATE VICE CHANCELLOR

DATE

ACADEMIC AFFAIRS