APPLICATION FOR NEW COURSE

1. Submitted by the College of Arts and Sciences Date: 1/18/08

   Department/Division proposing course: Earth and Environmental Sciences

2. Proposed designation and Bulletin description of this course:

   a. Prefix and Number GLY 385

   b. Title* Hydrology and Water Resources

   *If title is longer than 24 characters, write a sensible title (24 characters or less) for use on transcripts:

   Hydrology

   c. Courses must be described by at least one of the categories below. Include the number of actual contact hours per week for each category, as applicable.

   (___) CLINICAL (___) COLLOQUIUM (___) DISCUSSION (___) LABORATORY (3) LECTURE

   (___) INDEPEND. STUDY (___) PRACTICUM (___) RECITATION (___) RESEARCH (___) RESIDENCY

   (___) SEMINAR (___) STUDIO (___) OTHER – Please explain: _____

   d. Please choose a grading system: ☒ Letter (A, B, C, etc.) ☐ Pass/Fail

   e. Number of credit hours: 3

   f. Is this course repeatable? YES ☐ NO ☒ If YES, maximum number of credit hours: _____

   g. Course description:

   The occurrence, movement, and quality of fresh water in the water cycle, including environmental problems and possible solutions, Case studies are explored through readings, videos, and required field trips.

   h. Prerequisite(s), if any:

   GLY 220

   i. Will this course be offered through Distance Learning? YES ☐ NO ☒

   If YES, please circle one of the methods below that reflects how the majority of the course content will be delivered:

   Internet/Web-based | Interactive video | Extended campus | Kentucky Educational Television (KET/teleweb) | Other

   Please describe "Other": _____

3. Teaching method: ☒ N/A or ☐ Community-Based Experience ☐ Service Learning Component ☐ Both

4. To be cross-listed as: N/A
   Prefix and Number

   _____
   Signature of chair of cross-listing department

5. Requested effective date (term/year): Fall / 2008

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6. Course to be offered (please check all that apply): ☒ Fall ☐ Spring ☐ Summer

7. Will the course be offered every year? ☒ YES ☐ NO

If NO, please explain: _____

8. Why is this course needed?

Courses with some overlap in content include AEN 461G (Biometerorology), BAE 438G/CE 460 (Fundamentals of Ground-water Hydrology), CE 461G (Hydrology, FOR 460G (Forest Watershed Management), see attachments

9. a. By whom will the course be taught? Alan Fryar, Associate Professor, Earth & Envir. Sci.

b. Are facilities for teaching the course now available? ☒ YES ☐ NO

If NO, what plans have been made for providing them?

_____

10. What yearly enrollment may be reasonably anticipated?

25

11. a. Will this course serve students primarily within the department? ☒ Yes ☐ No

b. Will it be of interest to a significant number of students outside the department? ☒ YES ☐ NO

If YES, please explain.

The previous offering of the course was taken by students in the Natural Resource Conservation and Management B.S. program in the College of Agriculture. Students from Geography are expected to enroll as well.

12. Will the course serve as a University Studies Program course†? ☐ YES ☒ NO

If YES, under what Area? _____

†AS OF SPRING 2007, THERE IS A MORATORIUM ON APPROVAL OF NEW COURSES FOR USP.

13. Check the category most applicable to this course:

☒ traditional – offered in corresponding departments at universities elsewhere

☐ relatively new – now being widely established

☐ not yet to be found in many (or any) other universities

14. Is this course applicable to the requirements for at least one degree or certificate at UK? ☒ Yes ☐ No

15. Is this course part of a proposed new program? ☐ YES ☒ NO

If YES, please name: _____

16. Will adding this course change the degree requirements for ANY program on campus? ☐ YES ☒ NO

If YES‡, list below the programs that will require this course:

_____

_____

‡In order to change the program(s), a program change form(s) must also be submitted.

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17. ☒ The major teaching objectives of the proposed course, syllabus and/or reference list to be used are attached.

18. ☐ Check box if course is 400G or 500. If the course is 400G- or 500-level, *you must include a syllabus showing differentiation* for undergraduate and graduate students by (i) requiring additional assignments by the graduate students; and/or (ii) the establishment of different grading criteria in the course for graduate students. (See *SR 3.1.4)*

19. Within the department, who should be contacted for further information about the proposed new course?

Name: Dr. Alan Fryar Phone: 257-4392 Email: _____

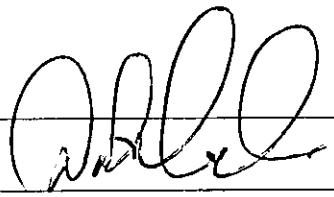
20. Signatures to report approvals:

12/01/07 DATE of Approval by Department Faculty	William A. Thomas / Willie A. Thomas printed name / signature	Reported by Department Chair
2/19/08 DATE of Approval by College Faculty	Leonidas Bachas / [signature] printed name / signature	Reported by College Dean
3/18/08 * DATE of Approval by Undergraduate Council	S. Gill / [signature] printed name / signature	Reported by Undergraduate Council Chair
_____ * DATE of Approval by Graduate Council	_____ / _____ printed name / signature	Reported by Graduate Council Chair
_____ * DATE of Approval by Health Care Colleges Council (HCCC)	_____ / _____ printed name / signature	Reported by Health Care Colleges Council Chair
_____ * DATE of Approval by Senate Council		Reported by Office of the Senate Council
_____ * DATE of Approval by University Senate		Reported by Office of the Senate Council

*If applicable, as provided by the *University Senate Rules. (http://www.uky.edu/USC/New/RulesandRegulationsMain.htm)*

APEX Review for Course or Program Proposal

Changes in the major and/or minor requirements affect our current electronic degree audit system, APEX. How will the degree audit in APEX be affected by the course or program proposal? Please show in detail the changes and how they would impact major or minor requirements in your department or the College requirements if the proposal is approved. If you are unsure as to how to answer this question, please contact Sean Cooper in the Arts & Sciences Advising Center at sean.cooper@uky.edu or 257-8712 before filing this proposal.

Proposal: **New Course GLY 385 Hydrology and Water Resources**
Impact on department major: **GLY 385 should be added to courses that satisfy the major requirement of 6 credits at the 300 level or higher in GLY or related fields**
Impact on department minor: **GLY 385 will satisfy 3 credits of the 9 credits required at the 300 level or higher in GLY or a related field.**
Impact on College requirements: **none**
Director of Undergraduate Studies: Signature of department DUS required: 
Who should be consulted for further information on the proposed change? Name: David Moecher, DUS E-mail: moker@uky.edu Phone: 257-6939

ARTS AND SCIENCES
EDUCATIONAL POLICY COMMITTEE
INVESTIGATOR REPORT

http://www.as.uky.edu/Admin/faculty/viewdocs/summary/

INVESTIGATING AREA: **Natural & Math. Sci.** (COURSE), MAJOR, DEGREE or PROGRAM: Gly 335

DATE FOR EPC REVIEW: 2/9/05 CATEGORY: (NEW), CHANGE, DROP

INSTRUCTIONS: This completed form will accompany the course application to the Graduate/Undergraduate Council(s) in order to avoid needless repetition of investigation. The following questions are included as an outline only. Be as specific and as brief as possible. If the investigation was routine, please indicate this. The term "course" is used to indicate one course, a series of courses or a program, whichever is in order. Return the form to **Leonidas Bachas Associate Dean, 275 Patterson Office Tower** for forwarding to the Council(s). ATTACH SUPPLEMENT IF NEEDED.

1. List any modifications made in the course proposal as submitted originally and why.

2. If no modifications were made, review considerations that arose during the investigation and the resolutions.

3. List contacts with program units on the proposal and the considerations discussed therein.

4. Additional information as needed.

5. A&S **Area Coordinator** Recommendation:

   (APPROVE), APPROVE WITH RESERVATION, OR DISAPPROVE

6. A&S **Education Policy Committee** Recommendation:

   (APPROVE), APPROVE WITH RESERVATION, OR DISAPPROVE

7. Ruth E Beattie Date: Feb 15, 2005

A&S Educational Policy Committee,
Ruth Beattie rebeat1@uky.edu 257-7641

File: \InvestigatorRpt

UNIVERSITY OF KENTUCKY

College of Arts and Sciences
Earth and Environmental Sciences
101 Slone Building
Lexington, KY 40506-0053
(859) 257-3758
Fax: (859) 323-1938
www.uky.edu/AS/Geology

October 11, 2007

Dr. David Moecher
Director of Undergraduate Studies
Department of Earth and Environmental Sciences
University of Kentucky
101 Slone Building
CAMPUS 0053

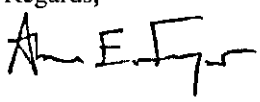
Dear Dave:

I'm writing to provide information about my rationale for proposing a new undergraduate course in hydrology and water resources. As noted on the proposal form, this 300-level course would fill a niche not only in our department and Arts & Sciences, but campus-wide. Currently, there is no undergraduate course at UK that encompasses water science and management, although comparable courses are offered in geology programs at other universities, such as Ohio State. This course would replace GLY 430 (Environmental Geohydrology), which was last offered before my arrival at UK in 1995.

The proposed course stems from two courses I taught last spring while on leave at the University of the South (Sewanee): a hydrology course with a lab and a special topics course in water resources and policy. I've integrated those (minus the lab) into a prototype of the proposed course, which I'm teaching this fall as GLY 480-002 (Advanced Topics in Geology: Environmental Geohydrology). I'm covering aspects of water science during the first two-thirds of the term and will emphasize water-resources management during the final third. I'm including various case studies and have scheduled two day trips (one a canoe trip on the Kentucky and Dix rivers, the other a visit to the City of Wilmore's water and wastewater treatment plants). I have 21 students (11 Geology majors, 8 Natural Resources Conservation and Management [NRCM] majors, one Geology minor, and a post-bac taking Geology courses). Mike Mullen, Associate Dean for Academic Programs in Agriculture, has indicated that NRCM students will likely continue to take the proposed course to meet major requirements. Some Geology and NRCM majors have taken my GLY 585 (Hydrogeology) course. However, that focuses primarily on groundwater; it's more quantitatively sophisticated (i.e., calculus-based), and it's taken by graduate students as well. Based on my experience teaching GLY 585, I expect that the new course will also draw students from Geography and various programs in the College of Engineering.

Please let me know if you have any questions or concerns.

Regards,



Alan E. Fryar
Associate Professor

UNIVERSITY SENATE ROUTING LOG

Proposal Title: New Course: *GLY 385 Hydrology and Water Resources*

Name/email/phone for proposal contact: Prof. Alan Fryar, alan.fryar@uky.edu, 257-4392

Instruction: To facilitate the processing of this proposal please identify the groups or individuals reviewing the proposal, identify a contact person for each entry, provide the consequences of the review (specifically, approval, rejection, no decision and vote outcome, if any) and please attach a copy of any report or memorandum developed with comments on this proposal.

Reviewed by: (Chairs, Directors, Faculty Groups, Faculty Councils, Committees, etc)	Contact person Name (phone/email)	Consequences of Review:	Date of Proposal Review	Review Summary Attached? (yes or no)
Director of Undergraduate Studies	David Moecher 257-6939 moker@uky.edu	Approved	12-18-07	no
Dept. Chair	William Thomas 257-3758 geowat@uky.edu			
A&S Education Policy Comm.	Roxie Hanson 257-5821 rhanson@email.uky.edu	Approved	2/19/08	yes
Undergraduate Council	Sharon Gill 257-8389 sgill@uky.edu			
Senate Council	Sheila Brothers 257-5872 Sheila.brothers@uky.edu			

DRAFT SYLLABUS **DRAFT SYLLABUS** **DRAFT SYLLABUS**

GLY 385 Hydrology and Water Resources (3 credit hours)

Abbreviated title: Hydrology

Lecture times: TR 9:30-10:45
Lecture location: 205 Slone Research Bldg.

Course Description: Occurrence, movement, and quality of fresh water in the water cycle, including environmental problems and possible solutions. Case studies are explored through readings, videos, and required field trips.

Professor: Alan Fryar, 212-A Slone (e-mail alan.fryar@uky.edu, phone 257-4392)
Office hours: MF 12:00-12:50, drop in, or by appointment

Textbook: J.C. Manning, 1997, Applied Principles of Hydrology, 3rd ed. (required; also on reserve)

Web texts:
L.R. Brown, 2006, Chapter 3, Emerging water shortages, *in* Plan B 2.0: Rescuing a Planet Under Stress and a Civilization in Trouble, Earth Policy Institute (www.earth-policy.org/Books/PB2/pb2ch3.pdf)
R.C. Heath, 1998, Basic Ground-Water Hydrology, U.S. Geological Survey Water-Supply Paper 2220 (http://onlinepubs.er.usgs.gov/djvu/wsp/WSP_2220.pdf)
S.S. Hutson and others, 2004, Estimated Use of Water in the United States in 2000, U.S. Geological Survey Circular 1268 (http://pubs.usgs.gov/circ/2004/circ1268/)
R.B. Jackson and others, 2001, Water in a Changing World, Issues in Ecology 9, Ecological Society of America (www.epa.gov/watertrain/pdf/issue9.pdf)
United Nations Development Programme (UNDP), 2006, Overview: Beyond Scarcity: Power, Poverty, and the Global Water Crisis, U.N. Human Development Report 2006 (http://hdr.undp.org/hdr2006/pdfs/report/HDR_2006_Overview.pdf)
T.C. Winter and others, 1998, Ground Water and Surface Water, A Single Resource, U.S. Geological Survey Circular 1139 (http://pubs.usgs.gov/circ/circ1139)
Other readings TBA

Reserves for additional information (in Geology and Maps Library [410 King South]):
S.L. Dingman, 1994, Physical Hydrology
G.M. Hornberger and others, 1998, Elements of Physical Hydrology
E.C. Pielou, 1998, Fresh Water

Course content and activities: This course encompasses the occurrence, movement, and quality of fresh water in the water cycle, including environmental problems and possible solutions. Case studies will be explored in part through readings, videos, and field trips.

- There will tentatively be two field trips (one on a weekday and one on a Saturday) to examine hydrology and water-resources management in central Kentucky. I will notify you well ahead of time so that you may arrange your class and work schedules accordingly. I will provide a written or e-mail excuse for any instructors that require documentation for your absence on the weekday trip. You should notify all instructors of pending absences.

- There will tentatively be five homework assignments, including problem sets (drawing on case studies and practical examples) and short papers (based on readings and videos). Each will count 10% of the final grade. Assignments are due *in class*, not after class.
- Both the midterm and final will include questions from field trips and/or videos. The exams may include conceptual, short-answer questions and calculations. The final will be cumulative but will focus on the second half of the course. Each exam will count 25% of the overall grade.

Summary of assignment weighting

Homework (5 assignments @ 10% each) = 50%

Exams (midterm and final @ 25% each)= 50%

- Late penalties for homework and papers will be 5% per day if unexcused. Overall grades will be as follows: 90 and above = A; 80–89 = B; 70–79 = C; 60–69 = D; below 60 = E; curving is possible.

Course Objectives and Goals: Upon completion of GLY 385, a student should be able to do the following:

- identify the components of the hydrologic cycle, the relative abundance of water in different global reservoirs, and the relative residence times of water in those reservoirs;
- describe the mechanisms by which water returns to the atmosphere, how infiltration occurs, and how runoff is generated;
- explain seasonal and depth-dependent variations in lake temperature and chemistry;
- delineate watershed boundaries and identify drainage patterns and stream orders;
- describe how stream discharge and velocity are related, and how they vary with time and location;
- understand the differences between porosity, water content, permeability, and hydraulic conductivity, and how they depend upon particle size;
- know Darcy's law and how to map groundwater flow;
- explain major processes controlling freshwater quality;
- understand the major uses of water, how water resources are managed and impacted by humans, and possible solutions to those impacts.

Tentative class schedule (subject to change; chapters refer to Manning, with other readings as noted)

Aug. 23: Introduction; origin of water on Earth (Ch. 1)
Aug. 28, 30: Water cycle and properties of water (Ch. 1, 2)
Sept. 4, 6, 11: Precipitation, evaporation, and transpiration (Ch. 4, 3, 6)
Sept. 13, 18: Infiltration and soil water (Ch. 5)
Sept. 20, 25: Limnology
Sept. 27, Oct. 2: Watershed delineation and fluvial geomorphology (Ch. 8)
Oct. 4, 9: Streamflow and runoff (Ch. 8)
Oct. 11: Midterm exam
Last day to withdraw from classes (Friday Oct. xx)
Oct. 16, 18: Hydraulic properties and ground-water dynamics (Ch. 7; Heath; Winter and others)
Oct. 23, 25: Chemical quality of natural water (Ch. 9)
Oct. 30, Nov. 1: TBA (*Fryar at GSA Annual Meeting*)
Nov. 6: Water usage (Ch. 10; Hutson and others; Jackson and others)

Nov. 8, 13: Water-resources management (Ch. 10; UNDP)
Nov. 15, 20: Drought and flooding (Ch. 8)
Nov. 27, 29: Point- and non-point source pollution (Heath)
Dec. 4, 6: Future water-resources availability and possible solutions (Brown)
Dec. 11: Final exam (10:30 a.m.) Rm. 305 Slone Building

Attendance and Assignment Make Up Policy

-Attendance is *expected*, but you will not receive credit for attendance. If you miss class, copies of my notes and links to readings will be available on Blackboard.

-If you anticipate a conflict with a scheduled exam, notify me ahead of time and we will arrange a time for you to take the exam before the class takes the exam.

-If you miss an exam due to a legitimate university excuse (see the Handbook of Student Rights and Responsibilities 5.2.4.2 for what constitutes a legitimate excuse; also see below). Contact me as soon as possible after the exam so that I can arrange a time for a makeup exam.

Excused Absences: S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences:

a. serious illness
b. illness or death of family member
c. University-related trips
d. major religious holidays

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (257-2754).

Classroom Decorum and Civility

Feel free to express your opinion, and be able to support those opinions with facts, but respect the opinion of other students. Turn off cell phones and pagers. It is very disrespectful to be text-messaging while the instructor is talking.

Cheating and Academic Integrity

Cheating of any kind will not be tolerated. I encourage you to work together and study together for exams. However, assignments must be completed on your own. In addition, direct copying of information and phrases from Internet sites and other sources constitutes plagiarism. Submit your own work in your own words! Any sources used for written assignments must be properly documented. See the UK "Student Rights and Responsibilities" handbook for a discussion of cheating and plagiarism if you have questions. Also see the PDF on Plagiarism at the Academic Ombud's web page:

http://www.uky.edu/Ombud/

As students and faculty in the University of Kentucky, we are all responsible for adhering to these policies. It is particularly important that you understand what constitutes cheating and plagiarism and that you are aware of the consequences of such actions. The minimum penalty for confirmed cases of cheating or plagiarism is failure for the course.