

Course Information

Date Submitted: 11/16/2015

Current Prefix and Number: FOR - Forestry , FOR 200 BASICS OF GEOSPATIAL TECHNOLOGY

Other Course:

Proposed Prefix and Number: FOR 200

What type of change is being proposed?

Major Change

Should this course be a UK Core Course? Yes

Quantitative Foundations

RECEIVED

APR 8 2016

OFFICE OF THE
SENATE COUNCIL**1. General Information**

a. Submitted by the College of: AGRICULTURE, FOOD AND ENVIRONMENT

b. Department/Division: Forestry

c. Is there a change in 'ownership' of the course? No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: Laura R. Lhotka

Email: laura.lhotka@uky.edu

Phone: 859-257-8718

Responsible Faculty ID (if different from Contact)

Name: Darryl Cremeans

Email: darryl.cremeans@uky.edu

Phone: 859-257-1396

f. Requested Effective Date

Semester Following Approval: Yes OR Effective Semester:

2. Designation and Description of Proposed Course

a. Current Distance Learning (DL) Status: N/A

b. Full Title: BASICS OF GEOSPATIAL TECHNOLOGY

Proposed Title: Basics of Geospatial Technology

c. Current Transcript Title: BASICS OF GEOSPATIAL TECHNOLOGY

Proposed Transcript Title: Basics of Geospatial Technology

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

LECTURE: 1

LABORATORY: 3

Proposed Meeting Patterns

LECTURE: 2

LABORATORY: 2

f. Current Grading System: ABC Letter Grade Scale

Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 2

Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit? No

Proposed to be repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester? No

2i. **Current Course Description for Bulletin:** A basic introduction to the various types of maps and their uses, field navigation skills, and map making. The course is heavily field and laboratory based, with an emphasis on hands-on learning and practice. Both traditional technologies, such as compasses, U.S. Geological Survey maps, and aerial photographs as well as newer technologies, such as global positioning systems and geographic information system databases will be employed in carrying out course exercises.

Proposed Course Description for Bulletin: A basic introduction to the various types of maps and their uses, field navigation skills, and map making. The course is heavily field and laboratory based, with an emphasis on hands-on learning and practice. Both traditional technologies, such as compasses, U.S. Geological Survey maps, and aerial photographs as well as newer technologies, such as global positioning systems and geographic information system databases will be employed in carrying out course exercises.

2j. Current Prerequisites, if any: none

Proposed Prerequisites, if any: none

2k. Current Supplementary Teaching Component:

Proposed Supplementary Teaching Component: No Change

3. Currently, is this course taught off campus? No

Proposed to be taught off campus? No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed? Yes

If YES, explain and offer brief rationale: The course content and student learning outcomes have been modified to meet the Quantitative Foundation requirements of the UK Core. An additional credit hour has been added to accommodate the expanded content to meet the UK Core requirements and additional GIS content.

5a. Are there other depts. and/or pgms that could be affected by the proposed change? Yes

If YES, identify the depts. and/or pgms: Natural Resources and Environmental Science

5b. Will modifying this course result in a new requirement of ANY program? No

If YES, list the program(s) here:

6. Check box if changed to 400G or 500: No

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6. How do course requirements ensure that students make appropriate use of learning resources?

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10. Does the syllabus contain all the required components? NO

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|TTBA225|Terrell T Baker|FOR 200 CHANGE Dept Review|20150302

SIGNATURE|LGRABAU|Larry J Grabau|FOR 200 CHANGE College Review|20150716

SIGNATURE|RBROWN|Russell M Brown|FOR 200 CHANGE UKCEC Expert Review|20150716

SIGNATURE|JMETT2|Joanie Ett-Mims|FOR 200 CHANGE UKCEC Review|20151116

SIGNATURE|JMETT2|Joanie Ett-Mims|FOR 200 CHANGE Undergrad Council Review|20160408

Course Change Form

<https://myuk.uky.edu/sap/bc/soap/rfc?services=>

Open in full window to print or save

Generate R

Attachments:

Upload File

Browse...

ID	Attachment
Delete 5773	FOR200Syllabus111615_revised.pdf
Delete 5774	FOR200QuantitativeFoundations UKCore 111615-revise

First | 1 | Last

NOTE: Start form entry by choosing the Current Prefix and Number
 (*denotes required fields)

Current Prefix and Number:	FOR - Forestry FOR 200 BASICS OF GEOSPATIAL TECHNOLOGY	Proposed Prefix & Number: (example: PHY 401G) <input checked="" type="checkbox"/> Check if same as current	FOR 200
* What type of change is being proposed?		<input checked="" type="checkbox"/> Major Change <input type="checkbox"/> Major -- Add Distance Learning <input type="checkbox"/> Minor - change in number within the same hundred series, ex 799 is the same "hundred series" <input type="checkbox"/> Minor - editorial change in course title or description which do change in content or emphasis <input type="checkbox"/> Minor - a change in prerequisite(s) which does not imply a change in course content or emphasis, or which is made necessary by the significant alteration of the prerequisite(s) <input type="checkbox"/> Minor - a cross listing of a course as described above	
Should this course be a UK Core Course? <input checked="" type="radio"/> Yes <input type="radio"/> No			
If YES, check the areas that apply:			
<input type="checkbox"/> Inquiry - Arts & Creativity <input type="checkbox"/> Composition & Communications - II <input type="checkbox"/> Inquiry - Humanities <input checked="" type="checkbox"/> Quantitative Foundations <input type="checkbox"/> Inquiry - Nat/Math/Phys Sci <input type="checkbox"/> Statistical Inferential Reasoning <input type="checkbox"/> Inquiry - Social Sciences <input type="checkbox"/> U.S. Citizenship, Community, Diversity <input type="checkbox"/> Composition & Communications - I <input type="checkbox"/> Global Dynamics			
1. General Information			
a.	Submitted by the College of: AGRICULTURE, FOOD AND ENVIRONMENT		Submission Date: 11/16/2015
b.	Department/Division: Forestry		
c.* Is there a change in "ownership" of the course?			
<input type="radio"/> Yes <input checked="" type="radio"/> No If YES, what college/department will offer the course instead? Select...			
e.*			
* Contact Person Name:		Laura R. Lhotka	Email: laura.lhotka@uky.edu Phone: 859-257-8718
* Responsible Faculty ID (if different from Contact):		Darryl Cremeans	Email: darryl.cremeans@uky.edu Phone: 859-257-1396
f.* Requested Effective Date:			
		<input checked="" type="checkbox"/> Semester Following Approval	OR Specific Term: 2
2. Designation and Description of Proposed Course.			
a.		Current Distance Learning(DL) Status:	<input checked="" type="radio"/> N/A <input type="radio"/> Already approved for DL* <input type="radio"/> Please Add <input type="radio"/> Please Drop
*If already approved for DL, the Distance Learning Form must also be submitted unless the department affirms (by checking this box) that the proposed change affect DL delivery.			
b.		Full Title:	BASICS OF GEOSPATIAL TECHNOLOGY
		Proposed Title: *	Basics of Geospatial Tech
c.		Current Transcript Title (if full title is more than 40 characters):	BASICS OF GEOSPATIAL TECHNOLOGY
c.		Proposed Transcript Title (if full title is more than 40 characters):	Basics of Geospatial Technology
d.		Current Cross-listing:	OR

	<input checked="" type="checkbox"/> N/A	Currently ³ Cross-listed with (Prefix & Number):	none
Proposed – ADD ² Cross-listing (Prefix & Number):			
Proposed – REMOVE ^{3,4} Cross-listing (Prefix & Number):			
e. Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours⁵ for each meeting pattern			
Current:	Lecture 1	Laboratory ⁵ 3	Recitation
	Clinical	Colloquium	Practicum
	Seminar	Studio	Other: _____ Please explain:
Proposed: *	Lecture 2	Laboratory ⁵ 2	Recitation
	Clinical	Colloquium	Practicum
	Seminar	Studio	Other: _____ Please explain:
f. Current Grading System:		ABC Letter Grade Scale	
Proposed Grading System:*		<input checked="" type="radio"/> Letter (A, B, C, etc.) <input type="radio"/> Pass/Fail <input type="radio"/> Medicine Numeric Grade (Non-medical students will receive a letter grade) <input type="radio"/> Graduate School Grade Scale	
g. Current number of credit hours:	2	Proposed number of credit hours:*	3
h.* Currently, is this course repeatable for additional credit?			<input checked="" type="radio"/> Yes <input type="radio"/> No
* Proposed to be repeatable for additional credit?			<input checked="" type="radio"/> Yes <input type="radio"/> No
If YES:	Maximum number of credit hours:		
If YES:	Will this course allow multiple registrations during the same semester?		<input checked="" type="radio"/> Yes <input type="radio"/> No
i. Current Course Description for Bulletin:			
A basic introduction to the various types of maps and their uses, field navigation skills, and map making. The course is heavily field and laboratory based, with an emphasis on hands-on learning and practice. Both traditional technologies, such as compasses, U.S. Geological Survey maps, and aerial photographs as well as newer technologies, such as global positioning systems and geographic information system databases will be employed in carrying out course exercises.			
* Proposed Course Description for Bulletin:			
A basic introduction to the various types of maps and their uses, field navigation skills, and map making. The course is heavily field and laboratory based, with an emphasis on hands-on learning and practice. Both traditional technologies, such as compasses, U.S. Geological Survey maps, and aerial photographs as well as newer technologies, such as global positioning systems and geographic information system databases will be employed in carrying out course exercises.			
j. Current Prerequisites, if any:			
none			
* Proposed Prerequisites, if any:			
none			
k. Current Supplementary Teaching Component, if any:			<input type="radio"/> Community-Based Experience

	<input type="radio"/> Service Learning <input checked="" type="radio"/> Both
Proposed Supplementary Teaching Component:	<input type="radio"/> Community-Based Experience <input type="radio"/> Service Learning <input type="radio"/> Both <input checked="" type="radio"/> No Change
3. Currently, is this course taught off campus?	<input type="radio"/> Yes <input checked="" type="radio"/>
* Proposed to be taught off campus?	<input type="radio"/> Yes <input checked="" type="radio"/>
If YES, enter the off campus address:	
4.* Are significant changes in content/student learning outcomes of the course being proposed?	<input checked="" type="radio"/> Yes <input type="radio"/>
If YES, explain and offer brief rationale:	
The course content and student learning outcomes have been modified to meet the Quantitative Foundation requirements of the UK Core. An additional credit hour has been added to accommodate the expanded content to meet the UK Core requirements and additional GIS content.	
5. Course Relationship to Program(s).	
a.* Are there other depts and/or pgms that could be affected by the proposed change?	<input checked="" type="radio"/> Yes <input type="radio"/>
If YES, identify the depts. and/or pgms:	
Natural Resources and Environmental Science	
b.* Will modifying this course result in a new requirement ² for ANY program?	<input type="radio"/> Yes <input checked="" type="radio"/>
If YES ² , list the program(s) here:	
6. Information to be Placed on Syllabus.	
a. <input checked="" type="checkbox"/> Check box if changed to 400G or 500.	If changed to 400G- or 500-level course you must send in a syllabus and you must include the differentiation between undergraduate students by: (i) requiring additional assignments by the graduate students; and/or (ii) establishing different grading course for graduate students. (See SR 3.1.4.)

¹See comment description regarding minor course change. *Minor changes are sent directly from dean's office to Senate Council Chair.* If Chair deems the change as "not minor," the form will be sent to the appropriate academic Council for normal processing and contact person is informed.

²Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

³Signature of the chair of the cross-listing department is required on the Signature Routing Log.

⁴Removing a cross-listing does not drop the other course – it merely unlinks the two courses.

⁵Generally, undergrad courses are developed such that one semester hr of credit represents 1 hr of classroom meeting per wk for a semester, exclusive of any lab meeting. Lab meeting generally represents at least two hrs per wk for a semester for 1 credit hour. (See SR 5.2.1.)

⁶You must also submit the Distance Learning Form in order for the course to be considered for DL delivery.

⁷In order to change a program, a program change form must also be submitted.

FOR 200 Basics of Geospatial Technology (3 Credits)

Course Syllabus - Fall 2016

<u>Time:</u>	Lecture - TBA Lab - TBA
<u>Place:</u>	TPC 220
<u>Instructors:</u>	Dr. Darryl Cremeans Office: 121A T.P. Cooper Phone: 859-257-1396 Email: darryl.cremeans@uky.edu Office Hours: TBA Dr. Jim Ringe Office: 108 T.P. Cooper Phone: 859-257-7594 Email: jringe@uky.edu Office Hours: TBA
<u>Textbook:</u>	none required <u>Recommended</u> Shellito, Bradley A. 2015 Discovering GIS and ArcGIS

COURSE OVERVIEW

Course Description from the Course Bulletin:

A basic introduction to the various types of maps and their uses, field navigation skills, and map making. The course is heavily field and laboratory based, with an emphasis on hands-on learning and practice. Both traditional technologies, such as compasses, U.S. Geological Survey maps, and aerial photographs as well as newer technologies, such as global positioning systems and geographic information system databases will be employed in carrying out course exercises.

Student Learning Outcomes:

After completing this course, the student will be able to:

1. Navigate landscapes using various equipment and techniques
2. Extract and interpret information from existing maps
3. Create and modify maps in the field and on computers
4. Analyze GIS data with appropriate tools and processes

COURSE POLICIES

Attendance Policy:

Lecture attendance is not graded, however missed material is the responsibility of the student to acquire. Missed lectures translate into reduced understanding of the material, do everything you can to attend all lectures. For labs where no written exercise is assigned, attendance is graded at 0.5%.

Excused Absences

Students need to notify the professor of absences prior to class when possible. Senate Rules 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, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

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 in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

Academic Integrity

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge

of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see <http://www.uky.edu/Faculty/Senate/> for the current set of Senate Rules) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>.

Emergency Situations

If an emergency arises in this classroom, building or vicinity, your instructor will advise you of actions to follow to enhance your safety. To receive emergency messages, sign up for UK Alert (<http://www.uky.edu/EM/UKAlert>). Always turn cellular phones to silent mode when entering the classroom. If you observe or receive an emergency alert, immediately and calmly inform your instructor."

Specific shelter and evacuation instructions for CAFE buildings can be found here:

- Shelter locations: <http://administration.ca.uky.edu/SevereWeatherSafePlaces>
- Building Emergency Action Plans (including evacuation instructions): <http://administration.ca.uky.edu/node/135>

Grading Procedures – Assignments, Grading Criteria, Letter Grades

Course grade will be based upon performance on the following evaluations:

Lecture and Lab homework assignments are due at the beginning of the class one week after they are assigned, unless otherwise noted. Late homework may not be accepted for a grade. Late homework, make-up quizzes and exams will only be given with an excused absence (S.R. 5.2.4.2). It is the student's responsibility to inform the instructor of the absence, preferably in advance, but no later than one week after the absence.

Homework Assignment 1 – Demonstrating Proficiency with Functional Relationships Between Two or More Sets of Variable Values

Geospatial buffer function demonstrates an offset distance from 1 dataset to create another. Buffering multiple variables will illustrate how they stack and affect management decisions.

Homework Assignment 2 – Applying Rules, Procedures and Techniques of Deductive Systems to Analyze and Solve Problems

You will use geospatial overlays to resolve where variables intersect showing that a set of conditions exist to satisfy or reject proposed operations such as timber harvesting, wildlife management, etc.

Lab Assignment 1 – Demonstrating Number Sense

You will compare map scales, slope steepness shown as topographic lines, measure ground distances in labs as compared to that shown on maps. You will solve for unknown locations on maps.

Lab Assignment 2 – Applying fundamental elements of mathematical, logical, or statistical knowledge to model and solve problems drawn from real life. Applying correct methods of argument or proof to validate their analyses, confirm their results, and consider alternative solutions.

Comparing directional readings to reverse of same, closing a traverse and calculating error. Compare multiple methods of surveying (plane, GPS, digital) for accuracy and efficiency.

Lab Assignment 3 – Interpreting and Communicating Results

You will obtain data layers for an area and project of interest, combine and analyze that data and produce maps. This map will be presented to the class with explanation of why this appropriate topic was chosen and what it shows.

2 Homework Assignments (10% each) –	20%
Lab Attendance (10 sessions @ .5% each) –	05%
3 Lab Assignments (5% each) –	15%
3 Exams (20% each) –	60%

Letter Grades

- A: $\geq 89.5\%$
- B: $\geq 79.5\%$ and $< 89.49\%$
- C: $\geq 69.5\%$ and $< 79.49\%$
- D: $\geq 59.5\%$ and $< 69.49\%$
- E: $< 59.49\%$

A grading curve may be applied at the discretion of the instructor.

Mid-term Grade:

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>)

Final Exam:

The final exam will be held as per the Schedule of Classes for this semester. Its location will be the course classroom.

Note: The instructor reserves the right to modify the syllabus at any time during this semester in order to achieve the learning objectives of the class. This includes steps to correct errors and omissions that may have occurred. If I do modify the syllabus, the new version will be provided to each student. There will also be a reasonable amount of time for the correction to be implemented.

Tentative Course Outline

MEETING	TOPIC	EXAM or HOMEWORK
Lecture 1	intro/syllabus	
Lab	<i>no lab this week</i>	
Lecture	Labor Day – no lecture	
Lecture 2	Overview of Maps	
Lab 1	<i>Compasses, azimuths, bearings</i>	
Lecture 3	Reading Topographic Maps and Making Calculations	
Lecture 4	Continued (estimating slope, aspect, acreage, distances, etc.)	
Lab 2	<i>Compass and Pacing, Taping, Range finding</i>	Lab 1 assigned
Lecture 5	Geographic Location Systems	
Lecture 6	Continued (Latitude and Longitude, UTM, PLSS, etc.)	
Lab 3	<i>Compass and Maps</i>	Lab 1 due
Lecture 7	Using a Compass and Clinometer	
Lecture 8	Global Positioning System	
Lab 4	<i>GPS</i>	Lab 2 assigned
Lecture 9	Navigation and Field Mapping	
Lecture 10	Continued	
Lab 5	<i>Making Field Maps</i>	Lab 2 due
Lecture 11	Exam 1	Exam 1
Lecture 12	Photogrammetry and Remote Sensing	
Lab 6	<i>Photogrammetry</i>	
Lecture 13	Introduction to GIS	
Lecture 14	Continued	
Lab 7	<i>Outdoor lab make-up day</i>	
Lecture 15	GIS data	
Lecture 16	Continued	
Lab 8	<i>Creation and conversion of GIS data</i>	Student Projects assigned
Lecture 17	Navigating a GIS map	
Lecture 18	Continued	
Lab 9	<i>TBA</i>	
Lecture 19	Finding Information	
Lecture 20	Continued	
Lab 10	<i>Map creation</i>	
Lecture 21	Exam 2	Exam 2
Lecture 22	Analyzing maps in GIS	
Lab 11	<i>Indoor time to work on assignment</i>	
Lecture 23	Continued	
Lecture 24	ArcToolbox in a nutshell	
Lab 12	<i>Presentation of student projects</i>	Student Projects due
Lecture 25	Presentation of student projects	
Lecture	Thanksgiving holiday – no lecture	
Lab	<i>Thanksgiving Holiday – no lab</i>	
Lecture 26	Buffer Analysis	HW 1 assigned
Lecture 27	Continued	
Lab 13	<i>Indoor time to work on assignment</i>	
Lecture 28	Creating Overlays	HW 1 due , HW 2 assigned
Lecture 29	Continued	
Lab 14	<i>Review (optional)</i>	
Final	Final exam	HW 2 due

**Course Review Form
Quantitative Foundations**

Reviewer Recommendation

Accept Revisions Needed

Course: FOR 200

Using the course syllabus as a reference, identify when and how the following learning outcomes are addressed in the course. Since learning outcomes will likely be addressed multiple ways within the same syllabus, please identify a representative example (or examples) for each outcome.

1. Students must demonstrate proficiency with number sense (e.g., order of magnitude, estimation, comparisons, effect of operations)

Date/location on syllabus or assignment:

Early map topics in lectures 2, 3, 4 and their associated labs

Brief Description:

Comparing map scales, slope steepness shown as topographic lines, measuring ground distance in labs as compared to that shown on maps. Solving for unknown locations on maps.

2. Students must demonstrate proficiency with functional relationships between two or more sets of variable values (i.e., when one or more variables depend upon, or are functions of, other variables)

Date/location on syllabus or assignment:

GIS topics in lectures 15, 26-29 and others, associated labs, and both homeworks

Brief Description:

Raster versus Vector data models explained and data conversion between the 2 models discussed in depth. Geospatial buffer function demonstrates an offset distance from 1 dataset to create another. GIS overlay analysis showing where multiple datasets create new data layers via tools such as erase, identity, intersect, symmetrical difference, union, and update.

3. Students must demonstrate proficiency in relating different representations of such relations (e.g., algebraically or symbolically, as tables of values, as graphs, and verbally)

Date/location on syllabus or assignment:

Maps and GIS topics and exercises throughout the semester, specific examples would be lab 6 and lecture 9

Brief Description:

Creating GIS database layers from various sources including the attributes necessary for analysis. Creating polygons in GIS to represent features on a map. Algebraic interpretation of contour lines to determine physical hill heights and slope percentages. Use of geometry to solve for tree heights from aerial photographs. Using a written deed to draw a property boundary and/or developing a property description from survey data.

4. Students must demonstrate understanding of relations between numerical values.

Date/location on syllabus or assignment:

Maps, GPS and GIS topics and exercises throughout the semester, specific examples would be lectures 6, 8 and 17 and lab 4

Brief Description:

Understanding map scales and how what the student sees on a map or screen translates into the real world. Use of various coordinate systems to describe a position on the earth's surface. Comparing various distance and location measurement tools for accuracy and precision.

5. Students must demonstrate that they can apply fundamental elements of mathematical, logical, or statistical knowledge to model and solve problems drawn from real life.

- a) Students must be able to recast and formulate everyday problems into appropriate mathematical or logistical systems, represent those problems symbolically, and express them visually or verbally.

Date/location on syllabus or assignment:

Map Creation lab 10 and both homework assignments

Brief Description:

Students will resolve proposed activities by gathering information, inputting it into GIS and analyzing data relationships to produce a visual explanation of their solution. They will then present their map along with an oral presentation to the class.

- b) Students must be able to apply the rules, procedures, and techniques of appropriate deductive systems to analyze and solve problems.

Date/location on syllabus or assignment:

Homework 2

Brief Description:

Students will use geospatial overlay to resolve where variables intersect showing that a set of conditions exist to satisfy or reject proposed operations such as timber harvesting, wildlife management, etc.

- c) Students must be able to apply correct methods of argument and proof to validate (or invalidate) their analyses, confirm their results, and to consider alternative solutions.

Date/location on syllabus or assignment:

Map and GPS topics particularly labs 1 and 4, lecture 9, and others

Brief Description:

Comparing directional readings to reverse of same, closing a traverse and calculating error. Compare multiple methods of surveying for accuracy and efficiency.

- d) Students must be able to interpret and communicate their results in various forms, including in writing and speech, graphically and numerically.

Date/location on syllabus or assignment:

Homework 1

Brief Description:

Students will obtain data layers for an area and project of interest, combine and analyze that data and produce maps. This map will be presented to the class with explanation of why this appropriate topic was chosen and what it shows.

- e) Students must be able to identify and evaluate arguments that contain erroneous or fallacious reasoning, and detect/describe the limitations of particular models or misinterpretations of data, graphs, and descriptive statistics.

Date/location on syllabus or assignment:

GIS and MAP topics mostly in lectures 5, 6, 8, and 15 and their associated labs

Brief Description:

Comparing various map projections and datum models where complete accuracy is impossible and understanding the shortcomings and the utility that remains. Understanding how to 'fit' data from 2 different projections onto a common scale so proper analysis can occur.

- f) Students must address Information Literacy as presented within curriculum for the science of quantitative reasoning. This involves problem solving, the use of estimation, thinking strategies for basic facts, formulating and investigating questions from problem situations, use of computers and calculators, or other technologies.

Date/location on syllabus or assignment:

Most topics throughout the semester particularly lectures 9 and 13-29 plus their associated labs, both homeworks and particularly the large GIS project.

Brief Description:

In this course the need for quality data to aid with decision making is a constant presence. This will be revealed throughout via demonstrations of GPS accuracy, GIS layer projection and registration, and how information goes out of date and needs updated (hands on exercises). Once the prerequisite information is covered, students will be asked to create and locate data that will be used in a GIS project to resolve a management question. They will have to identify the data layers needed (base imagery, elevation data, soil properties, precipitation data, tract boundaries, vegetative cover layers, etc.), locate and obtain the information from GPS transects and internet sources, update and modify that information to suit their project needs. They will then perform database queries to find conditions where all criteria are met. This information will be translated into recommended solutions to be presented. A thorough understanding of the how all this information can coalesce to resolve multidimensional issues will be needed to complete this project.

- At least 30% of the course addresses the items 1 – 4 on this checklist, and at least 40% of the course addresses items 5 a) – e) on the checklist.

Reviewer's Comments