Term Information

Effective Term	Autumn 2020
Previous Value	*Spring 2019*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

We are proposing that GEOG 5225 be offered in alternative formats. In addition to the traditional in person lecture, we propose to teach GEOG 5225 as a hybrid course (predominately online with one 50 minute in class session per week) and as a completely online course.

What is the rationale for the proposed change(s)?

Our goal is to make the course more available to students in all terms who need the course offered in an alternative format to accommodate work or athletic schedules, greater accessibility needs, as well as to accommodate students who are away from the OSU campus. Our hope is to increase enrollments with the completely online option. Alternative formats will also provide greater capacity potential enrollments without detracting from student learning and instructor engagement.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Geography
Fiscal Unit/Academic Org	Geography - D0733
College/Academic Group	Arts and Sciences
Level/Career	Graduate, Undergraduate
Course Number/Catalog	5225
Course Title	Geographic Applications of Remote Sensing
Transcript Abbreviation	Remote Sensing
Course Description	Introduction to the fundamental principles, methods, and geographic applications of remote sensing.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
	Greater or equal to 50% at a distance
Previous Value	*No*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Recitation, Lecture
Grade Roster Component	Recitation

Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	
Exclusions	Not open to students with credit for 5270.
Electronically Enforced	Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	27.0399
Subsidy Level	Doctoral Course
Intended Rank	Junior, Senior, Masters, Doctoral

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors
The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes	• Understand the fundamentals of remote sensing.
	• Describe the necessities for radiometric and geometric corrections and explain different types of radiometric and geometric correction methods and apply them via remote sensing software.
	• Identify the purposes for remote sensing imagery enhancement and classification.
	• Explain the concepts of supervised and unsupervised classifications.
Previous Value	• *Understanding of the fundamentals of remote sensing*
	• *Ability to use remote sensing for geographic applications*
Content Topic List	• Fundamental principles of remote sensing
	• Photography
	• Remote Sensing Systems
	• Radiometric and Geometric Correction
	• Image Enhancement
	• Geographic applications of remote sensing

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Previous Value

- *Fundamental principles of remote sensing*

- *Methods of remote sensing*

- *Geographic applications of remote sensing*

Sought Concurrence   No

Attachments

- Geog5225_syllabus_online.pdf: Syllabus (online)

  (Syllabus. Owner: Xiao,Ningchuan)

- Geog5225_syllabus_hybrid.pdf: Syllabus (hybrid)

  (Syllabus. Owner: Xiao,Ningchuan)

- GEOG 5225 Online_review.pdf: ASCTech review (online)

  (Other Supporting Documentation. Owner: Xiao,Ningchuan)

- GEOG 5225 Hybrid_review.pdf: ASCTech review (hybrid)

  (Other Supporting Documentation. Owner: Xiao,Ningchuan)

- Geog5225_syllabus_in_person.pdf: Syllabus (in person)

  (Syllabus. Owner: Xiao,Ningchuan)

Comments

- 12.04.19: Please attach a copy of the in-person syllabus. *(by Haddad,Deborah Moore on 12/04/2019 01:14 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Xiao,Ningchuan	12/04/2019 09:05 AM	Submitted for Approval
Approved	Munroe,Darla Karin	12/04/2019 09:11 AM	Unit Approval
Revision Requested	Haddad,Deborah Moore	12/04/2019 01:14 PM	College Approval
Submitted	Xiao,Ningchuan	12/04/2019 03:50 PM	Submitted for Approval
Approved	Munroe,Darla Karin	12/04/2019 03:52 PM	Unit Approval
Approved	Haddad,Deborah Moore	12/04/2019 04:52 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadette Chantal	12/04/2019 04:52 PM	ASCCAO Approval

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GEOG 5225 Geographic Applications of Remote Sensing (Online) Syllabus

Instructor Information

Name: Yang Song
Email address: song.630@ous.edu
Office hours: Zoom or in person, by appointment only
Office location: 1120 Derby Hall

Course Description

This course introduces the fundamentals of remote sensing and its geographic applications. Lectures will focus on basic concepts and techniques in remote sensing data acquisition and analysis. Computer laboratory exercises are designed to help students to gain hands-on experiences on the digital processing of remotely sensed data. Students are expected to complete a project that applies remote sensing techniques to solve a real-world problem.

In terms of the structure, approximately 2/3 of the course will focus on basic concepts, theories, platforms, atmospheric/geometric corrections and classification methods of remote sensing. The rest of the course will introduce applications of remote sensing in urban study, water body and vegetation monitoring.

This course is 100% online, and there is no required log-in to Carmen at a scheduled time. The course is divided into weekly modules which are released weekly. Students are expected to keep up with weekly deadlines. This is a 3-credit hour class. For each week, students should expect approximately 3 hours spent on online lectures and labs, and 6 hours of independent study such as textbook reading, online quizzes, lab assignments and preparation for the exam to earn a C grade.

Course Learning Outcomes

By the end of the semester, students should be able to:
- Describe maximal and minimal definitions of remote sensing and explain physical and logical process of remote sensing. Describe electromagnetic spectrum and explain how it is organized. Identify remote sensing data models, platforms and sensor models, and understand sensor characteristics and describe how they impact the quality of remotely sensed data.
- Describe the necessities for radiometric and geometric corrections and explain different types of radiometric and geometric correction methods and apply them via remote sensing software.
- Identify the purposes for remote sensing imagery enhancement and classification. Compare and contrast radiometric, spatial and spectral enhancement methods and utilize them under different circumstances.
- Explain the concepts of supervised and unsupervised classifications. Describe most widely used classification methods and be able to identify and apply

feasible/appropriate classification methods given a specific remote sensing data set and application scenario. Compare and assess performance of different classification methods applied on the same remote sensing image.

Course Materials (will check if Library has electronic version of them)

- Required textbook: Jensen, John R., 2015, Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall: Upper Saddle River, NJ, 4th ed., ISBN 9780134058160.
- Optional reference: Jensen, John R., 2007, Remote Sensing of the Environment: An Earth Resource Perspective, Prentice Hall: Upper Saddle River, NJ, 2nd ed., ISBN 9780131889507.

Evaluation

- Quizzes – 20%
    - There will be 8 closed book quizzes (each one with 8-10 multiple choice questions) through the semester, each one focusing on a chapter of the course.
- Lab assignments – 40%
    - There will be 8 labs through the semester, each one with an assignment containing around 10 open-ended questions based on lab contents.
    - Lab assignments are usually due **two weeks after the release of associated course module**. Lab 6 and 7 will be given more time to finish due to complexity.
    - All assignments will be submitted via Carmen in.pdf format.
- Exam – 20%
    - There will be one closed-book exam for the course. Students will have 1 hour to answer several open ended questions to finish the exam.
- Course project – 20%
    - Students are required to complete a final project that applies remote sensing techniques to solve a real-world problem of their own interest.
    - Students will need to submit a project proposal in the middle of the semester and a final report by the end of the semester. More details on project proposal and report can be found in Carmen.
- Grading Scale (OSU standard scale):

A	93-100%	B-	80-82%	D+	67-69%
A-	90-92%	C+	77-79%	D	60-66%
B+	97-89%	C	73-76%	E	0-59%
B	83-86%	C-	70-72%		

Course Policies

- Email policy
    - You are responsible for all course related emails, so be sure to check your inbox daily.
    - When emailing your instructor or TA, please always begin the subject of the email with the course number (GEOG5225) and your name (first name

followed by last name). This is important as your instructor and TA teach multiple classes and need to know to which class you are referring. A proper email subject should be like this: GEOG5225_John Smith_Schedule a make-up exam

- o Please leave at least 24 hours for instructor/TA to respond during school days.
- Lecture & lab questions policy
  - o Carmen discussion boards will be created for lecture, lab and project questions. Please categorize your questions and post them accordingly. You can also help other students with their questions but instructor and/or TA will answer all questions.
  - o Instructor/TA should give response to normal questions within 24 hours during school days. For complex questions regarding labs and projects, please leave at 48 hours during school days for instructor/TA to respond.
- Late submission policy
  - o Lab assignments will be penalized 10% for each day late. Project proposal and report will be penalized 20% for each day late.
  - o Extensions will not be granted due to lost work. Be sure you back up and keep all your work.
- Office hour policy
  - o Students need to email instructor or TA to arrange an office hour meeting.
  - o Office hour will be implemented via Zoom or in person. Please leave at least 48 hours for instructor or TA to arrange a meeting.
- Academic misconduct policy
  - o It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct: http://studentlife.osu.edu/pdfs/csc_12-31-07.pdf.
  - o Collaboration (via internet or face-to-face) for the purposes of troubleshooting is highly encouraged in this course, but everyone is expected to submit their own unique work. For example, asking a classmate how to resolve an unexpected error message is OK, but using another classmate's work (e.g. screen captures, etc.) as your own is NOT ok, regardless of whether or not they provide consent for the use of their materials. (Note: There are many other acceptable/unacceptable actions than those exemplified here.) If you have any questions or concerns about acceptable/unacceptable actions, ask your instructor for clarification/permission.
  - o All open-ended responses to questions, prompts, etc. must be written entirely, nearly entirely, or at least in majority using your own words. Use credible sources, and cite all sources, including those only referenced,

those indirectly paraphrased, and those directly quoted, being sure to use quotation marks to identify excerpts from these credible sources. This expectation to cite all of your sources also extends to the textbook, the lab instructions, lecture slides, other course materials, online resources, etc. Please contact Center for the Study and Teaching of Writing (CSTW, https://cstw.osu.edu/writing-center) or the instructor if you have difficulties organizing language for assignments.

- Disability services policy
  - Students with disabilities that have been certified by the Office for Disability Services (SLDS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs.
    - Address: 098 Baker Hall, 113 W. 12th Ave, Columbus, OH 43210
    - Telephone: 614-292-3307
    - Website: http://slds.osu.edu/
  - Registration with SLDS does not grant accommodations automatically. You need to bring the accommodation form provided by SLDS to the instructor to work out a plan for accommodations. Please contact the instructor as soon as you are registered with SLDS for attendance, assignment and/or exam accommodations.
- Other Course Policy
  - Please refer to Student Academic Services for more academic services provided by OSU.
  - Other student services can be accessed here.

Course Technology

Please contact OSU IT Service Desk for any help with password, university e-mail, Carmen, or any other technology issues, questions, or requests. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- Phone: 614-688-HELP (4357)
- Email: 8help@osu.edu
- Self-Service and Chat support: http://ocio.osu.edu/selfservice

Basic technical skills necessary for this course
- Basic computer and web-browsing skills
- Navigating and utilizing Carmen

Equipment
- Computer: As ERDAS IMAGINE software will be used, a Windows PC is needed. Specific system requirements can be found here.
- Webcam: built-in or external webcam, fully installed.
- Microphone: built-in laptop or tablet mic or external microphone.

Software
- Microsoft Office 365

- o All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
  - o Office 365 is installed within student's BuckeyeMail account. Full instructions for downloading and installation can be found here.
- ERDAS IMAGINE
  - o ERDAS IMAGINE is a professional software for remote sensing data processing. Students will be provided a one-year trial version of the software for the course. Installation guide can be found in Carmen.
  - o Please use this page to review the privacy policy of ERDAS IMAGINE.
- Proctorio: A software to monitor online exams. More details can be found here.

Tentative Schedule

Week	Dates	Topics	Readings	Labs/Quizzes
1	8/25/20-8/28/20	Introduction to Remote Sensing	Ch.1	Lab 1, Q1
2	8/31/20-9/4/20	Remote Sensing Basics	Ch.1, Ch.2	Lab 2, Q2
3	9/7/20-9/11/20	Photography		No Lab, Q3
4	9/14/20-9/18/20	Remote Sensing Systems	Ch.2	Lab 3, Q4
5	9/21/20-9/25/20	Radiometric Correction	Ch.6	Lab 4, Q5
6	9/28/20-10/2/20	Geometric Correction	Ch.7	Lab 5, Q6
7	10/5/20-10/9/20	Image Enhancement (I)	Ch.8	Lab 6
8	10/12/20-10/16/20	Image Enhancement (II)	Ch.8	Lab 6, Q7
9	10/19/20-10/23/20	Image Classification (I)	Ch.9	Lab 7
10	10/26/20-10/30/20	Image Classification (II)	Ch.9, Ch.13	Lab 7, Q8
11	11/2/20-11/6/20	***Exam***		No Lab, project proposal due
12	11/9/20-11/13/20	Remote Sensing Application (I)	Selected literature on urban remote sensing	Lab 8
13	11/16/20-11/20/20	Remote Sensing Application (II)	Selected literature on watercolor remote sensing	No lab, work for project
14	11/23/20-11/27/20	No class		No lab, work for project
15	11/30/20-12/4/20	Remote Sensing Application (III)	Selected literature on vegetation remote sensing	Project report due

GEOG 5225 Geographic Applications of Remote Sensing (Hybrid) Syllabus

Instructor Information

Name: Yang Song
Email address: song.630@ous.edu
Office hours: Zoom or in person, by appointment only
Office location: 1120 Derby Hall

Course Description

This course introduces the fundamentals of remote sensing and its geographic applications. Lectures will focus on basic concepts and techniques in remote sensing data acquisition and analysis. Computer laboratory exercises are designed to help students to gain hands-on experiences on the digital processing of remotely sensed data. Students are expected to complete a project that applies remote sensing techniques to solve a real-world problem.

In terms of the structure, approximately 2/3 of the course will focus on basic concepts, theories, platforms, atmospheric/geometric corrections and classification methods of remote sensing. The rest of the course will introduce applications of remote sensing in urban study, water body and vegetation monitoring.

This course is hybrid, and there is no required log-in to Carmen at a scheduled time. The course is divided into weekly modules which are released weekly. Students are expected to keep up with weekly deadlines. This is a 3-credit hour class. For each week, students should expect approximately 3 hours spent on online lectures and on-site labs at 135/140 Derby Hall, and 6 hours of independent study such as textbook reading, online quizzes, lab assignments and preparation for the exam to earn a C grade.

Course Learning Outcomes

By the end of the semester, students should be able to:
- Describe maximal and minimal definitions of remote sensing and explain physical and logical process of remote sensing. Describe electromagnetic spectrum and explain how it is organized. Identify remote sensing data models, platforms and sensor models, and understand sensor characteristics and describe how they impact the quality of remotely sensed data.
- Describe the necessities for radiometric and geometric corrections and explain different types of radiometric and geometric correction methods and apply them via remote sensing software.
- Identify the purposes for remote sensing imagery enhancement and classification. Compare and contrast radiometric, spatial and spectral enhancement methods and utilize them under different circumstances.

- Explain the concepts of supervised and unsupervised classifications. Describe most widely used classification methods and be able to identify and apply feasible/appropriate classification methods given a specific remote sensing data set and application scenario. Compare and assess performance of different classification methods applied on the same remote sensing image.

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- Optional reference: Jensen, John R., 2007, Remote Sensing of the Environment: An Earth Resource Perspective, Prentice Hall: Upper Saddle River, NJ, 2nd ed., ISBN 9780131889507.

Evaluation

- Quizzes – 20%
  - There will be 8 closed book quizzes (each one with 8-10 multiple choice questions) through the semester, each one focusing on a chapter of the course.
- Lab assignments – 40%
  - There will be 8 labs through the semester, each one with an assignment containing around 10 open-ended questions based on lab contents. Students are expected to attend lab sessions at assigned computer labs (135/140 Derby Hall).
  - Lab assignments are usually due **two weeks after the release of associated course module**. Lab 6 and 7 will be given more time to finish due to complexity.
  - All assignments will be submitted via Carmen in.pdf format.
- Exam – 20%
  - There will be one closed-book exam for the course. Students will have 1 hour to answer several open ended questions to finish the exam.
- Course project – 20%
  - Students are required to complete a final project that applies remote sensing techniques to solve a real-world problem of their own interest.
  - Students will need to submit a project proposal in the middle of the semester and a final report by the end of the semester. More details on project proposal and report can be found in Carmen.
- Grading Scale (OSU standard scale):

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A-	90-92%	C+	77-79%	D	60-66%
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  GEOG5225_John Smith_Schedule a make-up exam
- Please leave at least 24 hours for instructor/TA to respond during school days.
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acceptable/unacceptable actions, ask your instructor for clarification/permission.

- o All open-ended responses to questions, prompts, etc. must be written entirely, nearly entirely, or at least in majority using your own words. Use credible sources, and cite all sources, including those only referenced, those indirectly paraphrased, and those directly quoted, being sure to use quotation marks to identify excerpts from these credible sources. This expectation to cite all of your sources also extends to the textbook, the lab instructions, lecture slides, other course materials, online resources, etc. Please contact Center for the Study and Teaching of Writing (CSTW, https://cstw.osu.edu/writing-center) or the instructor if you have difficulties organizing language for assignments.

- Disability services policy
  - o Students with disabilities that have been certified by the Office for Disability Services (SLDS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs.
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Course Technology

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- Email: 8help@osu.edu
- Self-Service and Chat support: http://ocio.osu.edu/selfservice

Basic technical skills necessary for this course
- Basic computer and web-browsing skills
- Navigating and utilizing Carmen

Equipment
- Computer: As ERDAS IMAGINE software will be used, a Windows PC is needed. Specific system requirements can be found here.

- Webcam: built-in or external webcam, fully installed.
- Microphone: built-in laptop or tablet mic or external microphone.

Software
- Microsoft Office 365
  - All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
  - Office 365 is installed within student's BuckeyeMail account. Full instructions for downloading and installation can be found here.
- ERDAS IMAGINE
  - ERDAS IMAGINE is a professional software for remote sensing data processing. Students will be provided a one-year trial version of the software for the course. Installation guide can be found in Carmen.
  - Please use this page to review the privacy policy of ERDAS IMAGINE.
- Proctorio: A software to monitor online exams. More details can be found here.

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3	9/7/20-9/11/20	Photography		No Lab, Q3
4	9/14/20-9/18/20	Remote Sensing Systems	Ch.2	Lab 3, Q4
5	9/21/20-9/25/20	Radiometric Correction	Ch.6	Lab 4, Q5
6	9/28/20-10/2/20	Geometric Correction	Ch.7	Lab 5, Q6
7	10/5/20-10/9/20	Image Enhancement (I)	Ch.8	Lab 6
8	10/12/20-10/16/20	Image Enhancement (II)	Ch.8	Lab 6, Q7
9	10/19/20-10/23/20	Image Classification (I)	Ch.9	Lab 7
10	10/26/20-10/30/20	Image Classification (II)	Ch.9, Ch.13	Lab 7, Q8
11	11/2/20-11/6/20	***Exam***		No Lab, project proposal due
12	11/9/20-11/13/20	Remote Sensing Application (I)	Selected literature on urban remote sensing	Lab 8
13	11/16/20-11/20/20	Remote Sensing Application (II)	Selected literature on watercolor remote sensing	No lab, work for project
14	11/23/20-11/27/20	No class		No lab, work for project
15	11/30/20-12/4/20	Remote Sensing Application (III)	Selected literature on vegetation remote sensing	Project report due

GEOG 5225 Geographic Applications of Remote Sensing – AU 2019 Syllabus

Meeting Time:
> Lecture: T 2:20pm – 3:40pm, 270 Journalism Building
> Lab: T&R 3:55pm – 5:15pm, 135 Derby Hall

Instructor Name and Email: Dr. Yang Song, song.630@osu.edu
- Office Hours: T 11:00am-1:00pm @ 1120 Derby, or by appointment.

Teaching Assistant Name and Email: Xiaoyu Liang, liang.918@osu.edu
- Office Hours: T&R 12:30pm – 1:30pm @ 1083 Derby, or by appointment.

Course Description: This course introduces the fundamentals of remote sensing and its geographic applications. Lectures will focus on basic concepts and techniques in remote sensing data acquisition and analysis. Computer laboratory exercises are designed to help students to gain hands-on experiences on the digital processing of remotely sensed data. Students are expected to complete a project that applies remote sensing techniques to solve a real-world problem.

Materials:
- Textbooks:
    - Required textbook: Jensen, John R., 2015, Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall: Upper Saddle River, NJ, 4th ed., ISBN 9780134058160.
    - Optional reference: Jensen, John R., 2007, Remote Sensing of the Environment: An Earth Resource Perspective, Prentice Hall: Upper Saddle River, NJ, 2nd ed., ISBN 9780131889507.
- Data storage:
    - A portable memory device (with 16GB or larger storage), such as a portable hard drive or flash drive, is required. Please bring it with you to every lab session as all your work needs to be saved to this device.
    - You can also store your data with a cloud drive (Box, Google Drive etc.). Please remember to log out the cloud drive when you finish using a lab PC.

Evaluation:
- Lab assignments – 40%
    - There will be 8 labs through the semester, each one with an assignment.
    - Lab assignments are usually due ***one week after the lab session (5:00pm of the due day)***. Lab 6 and 7 will be given two weeks to finish due to complexity.
    - All assignments will be submitted via the course website in .doc, .docx or .pdf format (.pdf preferred). Do not expect to finish all lab work during the scheduled lab time. You will need to work outside of class to complete your labs.
- Exams – 20%
    - There will an examination in the second half of the semester during the normal lecture time. <u>Exam questions will be drawn from the lectures, textbooks and labs</u>.
- Course Project – 25%

- o Students are required to complete a final project that applies remote sensing techniques to solve a real-world problem of their own interest.
  - o You will need to submit a project proposal by 5pm of 10/29 and a final report by 5pm of 12/03. No late submissions of the proposal and final report will be accepted. More detailed information on the project will be discussed in class.
- Attendance – 15%
  - o Attendance is required and will be recorded at all class meetings. An attendance sheet will be passed around the classroom, and you are responsible for remembering to sign it. If you forget to sign the attendance sheet during the scheduled class time, you will be marked absent (unexcused).
    - o Unexcused Absences:
      - ➢ You may miss 2 classes (including lectures and labs) without penalty. Additional unexcused absences will result in a 1-point deduction from your attendance grade. No more than 15 points can be deducted from attendance.
    - o Excused Absences:
      - ➢ Please email the instructor (or TA if you can't attend a lab) for excused absences (e.g. due to illness, car trouble, conference attendance, required job training, passing away of a loved one, etc.) Proper documentation (e.g. doctor's note, bill from a mechanic, proof of conference registration, email from a supervisor, obituary, etc.) must be provided.
- Grading Scale (OSU standard scale):

A	93-100%	B-	80-82%	D+	67-69%
A-	90-92%	C+	77-79%	D	60-66%
B+	97-89%	C	73-76%	E	0-59%
B	83-86%	C-	70-72%		

  - o Your final grade as seen on the course website will be rounded to the nearest whole number (e.g. an 89.49 is a B+ while an 89.50 is an A) before being submitted to the University Registrar at the end of the semester.

Course Policies:
- Email correspondence policy
  - o You are responsible for all course related emails, so be sure to check your inbox on a daily basis.
  - o When emailing your instructor or TA, please always begin the subject of the email with the course number (GEOG5226) and your name (first name followed by last name). This is important as your instructor and TA teach multiple classes and need to know to which class you are referring. A proper email subject should be like this:
    GEOG5226_John Smith_Schedule a make-up exam
- Course website policy
  - o You are responsible for all announcements, additional readings, assignments and other material posted on the course website. Be sure to check it frequently.
- Lab questions policy
  - o Please send your lab-related questions as least 24 hours before the day/time the lab is due to allow your TA time to respond.
- Late submission policy
  - o Lab assignments will be penalized 10% for each day late.
  - o Extensions will not be granted due to lost work. Be sure you back up and keep all your work.

- Exam policy
  - Exam must be taken at the scheduled time, unless you have informed your instructor before the exam with proper reasons and documents and got approved by the instructor. Please contact your instructor in advance of the scheduled exam to schedule a make-up exam, except in the case of emergency.
  - You are expected to arrive to the exam on time. Students who arrive late to the exam will be permitted to begin the exam, until the first student leaves. After a student completes the exam and leaves, students who arrive late will not be permitted to begin the exam, will be asked to leave, and will be considered absent. Your absence will be considered unexcused, except in the case of emergency.
  - You are expected to finish the exam on time. Exam begins when schedule class time begins, and exams end when the scheduled class time ends. At the end of the scheduled class time, you are to stop working and turn in your exam. You may not continue working on your exam after the scheduled class time.
- Disability services policy
  - Students with disabilities that have been certified by the Office for Disability Services (SLDS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 098 Baker Hall, 113 W. 12th Ave, Columbus, OH 43210; telephone 614-292-3307; http://slds.osu.edu/.
  - Registration with SLDS does not grant accommodations automatically. You need to bring the accommodation form provided by SLDS to the instructor to work out a plan for accommodations. Please contact the instructor as soon as you are registered with SLDS for attendance, assignment and/or exam accommodations.
- Academic Misconduct policy
  - It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct: http://studentlife.osu.edu/pdfs/csc_12-31-07.pdf.
  - Collaboration for the purposes of troubleshooting is highly encouraged in this course, but everyone is expected to submit their own unique work. For example, asking a classmate how to resolve an unexpected error message is OK, but using another classmate's work (e.g. screen captures, etc.) as your own is NOT ok, regardless of whether or not they provide consent for the use of their materials. (Note: There are many other acceptable/unacceptable actions than those exemplified here.) If you have any questions or concerns about acceptable/unacceptable actions, ask your instructor for clarification/permission.
  - Do NOT leave any of your work saved on the lab computers, as this presents data security and academic integrity concerns.
    - If you leave your work on the lab computers, another student could access it and use it as their own, resulting in work that is identical or nearly identical (as determined by the instructor). If this happens, both will receive zeros for the assignment, and both will be held responsible for academic misconduct.
    - If you discover work that was left on the lab computers by another student, please immediately delete the files from the computer so that

they will not be available to anyone else. (You may also delete files who owners cannot be determined.)
- o All open-ended responses to questions, prompts, etc. must be written entirely, nearly entirely, or at least in majority using your own words. Use credible sources, and cite all sources, including those only referenced, those indirectly paraphrased, and those directly quoted, being sure to use quotation marks to identify excerpts from these credible sources. This expectation to cite all of your sources also extends to the textbook, the lab instructions, lecture slides, other course materials, online resources, etc. Please contact Center for the Study and Teaching of Writing (CSTW, https://cstw.osu.edu/writing-center) or the instructor if you have difficulties organizing language for assignments.

Classroom and Computers:
If you need to return to the computer lab outside of class time, please be aware that the building maybe locked at night, over weekends, and on holidays, so be sure to plan accordingly. When you do return to the computer lab outside of class time, there may be a class in session. Please attempt to avoid interrupting classes that are in session, and if there is a class in session, check the computer lab across the hall in Derby 140. It has the same software as Derby 135, and it is usually available.

If you would like to check the schedules for Derby 135 and 140, you can check the Room Matrix:
https://delegated.osu.edu/psp/csosuda_1/EMPLOYEE/CAMP/c/OSR_CUSTOM_MENU.OSR_ROOM_MATRIX.GBL
- • Enter DB0135 for Derby 135 or DB0140 for Derby 140.
- • Select the date under "Show Week of".
Click "Refresh Calendar".

GEOG 5225 Geographic Applications of Remote Sensing – Autumn 2019

Schedule

Week	Date	Topics	Readings	Labs
1	08/20	Lecture 1: Introduction to Remote Sensing	Ch.1	Lab 1
2	08/27	Lecture 2: Remote Sensing Basics	Ch.1, Ch.2	Lab 2
3	09/03	Lecture 3: Photography	Ch.3 (RSE)	No Lab
4	09/10	Lecture 4: Remote Sensing Systems	Ch.2	Lab 3
5	09/17	Lecture 5: Radiometric Correction	Ch.6	Lab 4
6	09/24	Lecture 6: Geometric Correction	Ch.7	Lab 5
7	10/01	Lecture 7: Image Enhancement (I)	Ch.8	Lab 6
8	10/08	Lecture 8: Image Enhancement (II)	Ch.8	Lab 6
9	10/15	Lecture 9: Image Classification (I)	Ch.9	Lab 7
10	10/22	Lecture 10: Image Classification (II)	Ch.9, Ch.13	Lab 7
11	10/29	*Exam*		No Lab, project proposal due
12	11/5	Lecture 11: Remote Sensing Application (I)		Lab 8
13	11/12	Lecture 12: Remote Sensing Application (II)		Open lab for project
14	11/19	Lecture 13: Remote Sensing Application (III)		Open lab for project
15	11/26	Working on course project, no class		No Lab
16	12/03	Working on course project, no class		Project report due @5pm 12/03

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: GEOG 5225 Online
Instructor: Yang Song
Summary: Geographic Applications of Remote Sensing

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			• Carmen • Proctorio • ERDAS IMAGINE • Office 365
6.2 Course tools promote learner engagement and active learning.	X			• Weekly check ins using Carmen Message Boards • Carmen Zoom for office hours.
6.3 Technologies required in the course are readily obtainable.	X			Many students may not have access to a PC. Other than that, everything is available either for free or by OSU site license.
6.4 The course technologies are current.	X			Most tech is web based and is updated regularly. ERDAS IMAGINE is at version 2020.
6.5 Links are provided to privacy policies for all external tools required in the course.	X			Privacy policy for ERDAS IMAGINE has been included in the course syllabus.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			Accessibility links are provided for all tools.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			Link provided.
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of

				use by being available through a standard web browser

Reviewer Information
- Date reviewed: 11/26/19
- Reviewed by: Ian Anderson

Notes: Attach dates to weekly schedule. Consider using the ASC Distance Learning Template.

[a]The following statement about disability services (recommended 16 point font): Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

[b]Add to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus.
http://advising.osu.edu/welcome.shtml

[c]Add to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. http://ssc.osu.edu. Also, consider including this link in the "Other Course Policies" section of the syllabus.

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: GEOG 5225 Hybrid
Instructor: Yang Song
Summary: Geographic Applications of Remote Sensing (Hybrid)

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			• Carmen • Proctorio • ERDAS IMAGINE • Office 365
6.2 Course tools promote learner engagement and active learning.	X			• Weekly check ins using Carmen Message Boards • Carmen Zoom for office hours.
6.3 Technologies required in the course are readily obtainable.	X			Many students may not have access to a PC. Other than that, everything is available either for free or by OSU site license.
6.4 The course technologies are current.	X			Most tech is web based and is updated regularly. ERDAS IMAGINE is at version 2020.
6.5 Links are provided to privacy policies for all external tools required in the course.	X			Privacy policy for ERDAS IMAGINE has been included in the course syllabus.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			Accessibility links are provided for all tools.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			Recommend that resources be developed to address any requests for alternative means of access to course materials.
8.4 The course design facilitates readability	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide

				student-users with a consistent user experience in terms of navigation and access to course content.
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

Reviewer Information
- Date reviewed: 11/26/19
- Reviewed by: Ian Anderson

Notes: Attach dates to weekly schedule. Consider using the ASC Distance Learning Template.

[a]The following statement about disability services (recommended 16 point font): Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

[b]Add to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus. http://advising.osu.edu/welcome.shtml

[c]Add to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. http://ssc.osu.edu. Also, consider including this link in the "Other Course Policies" section of the syllabus.