Remote Sensing and Geospatial Imagery  SPSM-5320

SU 2021  Section 36  3 Credits  05/31/2021 to 07/30/2021  Modified 05/04/2021

Meeting Times

Tuesdays 5:00 pm to 9:00 pm (Live)  https://webster-edu.zoom.us/j/91332484189

Monday - Sunday 12:00 am to 11:59 pm (Learning Management System)

The student will be provided with lecture presentations, discussions, assignments, and evaluations on a weekly basis. The student will manage their time to complete the aforementioned coursework on a weekly basis.

Contact Information

Dr. Louis Fletcher, louisfletcher00@webster.edu, (719) 322-7510

Description

Methods for deriving economic advantage and increasing resource management effectiveness through the use of remotely sensed imagery products are studied. Basic techniques for the analysis of imagery will be combined with hands-on use of current and evolving software applications and tools.

Outcomes

Upon successful completion of this course, the student will be able to:

1. Define, discuss, and recognize important terminology, facts, concepts, principles, analytic techniques, and theories taught in this remote sensing course.
2. Identify and apply appropriate terminology, facts, concepts, principles, analytic techniques, and theories of digital image processing when analyzing factual situations with remote sensing scenarios.
3. Develop reasonable solutions to remote sensing requirements using appropriate facts, concepts, principles, analytic techniques, and theories pertinent to digital image processing.
4. Evaluate the quality of their proposed solutions to digital image collection constraints.

Required Textbook

Introductory Digital Image Processing: A Remote Sensing Perspective

Author: Jensen
Publisher: Prentice Hall
Edition: 4th
ISBN: 978-0134058160

Deliverables

Evaluation

Criteria

Evaluation Area Points

Participation in Discussions and Knowledge Checks 50% (Discussions 40%, Knowledge Checks 10%)

Presentation 20%

Research Paper 30% (Paper 25%, Abstract 5%)
Total 100%

The following grade point structure is used to compute the letter grades for the final course grade.

<table>
<thead>
<tr>
<th>Grade Points Earned</th>
<th>Equivalent Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-100</td>
<td>A  Superior Graduate Work</td>
</tr>
<tr>
<td>90-93</td>
<td>A- Superior Graduate Work</td>
</tr>
<tr>
<td>87-89</td>
<td>B+ Satisfactory Graduate Work</td>
</tr>
<tr>
<td>83-86</td>
<td>B  Satisfactory Graduate Work</td>
</tr>
<tr>
<td>80-82</td>
<td>B- Satisfactory Graduate Work</td>
</tr>
<tr>
<td>70-79</td>
<td>C  Work that is barely adequate as graduate-level performance</td>
</tr>
<tr>
<td>Below 70</td>
<td>F  Work that is unsatisfactory</td>
</tr>
<tr>
<td>I</td>
<td>I  Incomplete work</td>
</tr>
<tr>
<td>ZF</td>
<td>ZF  An &quot;I&quot; that is not completed within one year of the end of the course is automatically converted to a &quot;ZF&quot;. A &quot;ZF&quot; is treated the same as an F or NC for all cases involving GPA, academic warning, probation, and dismissal.</td>
</tr>
<tr>
<td>W</td>
<td>W  Withdrawn from the course</td>
</tr>
</tbody>
</table>

Schedule

Week 1

Introductions

Grading / Standards / Student Expectations

Remote Sensing and Digital Image Processing

Remote Sensing Data Collection

Research Paper Overview

Reading

Chapters 1 & 2

Week 2

Digital Image Processing Hardware and Software

Image Quality Assessment and Statistical Evaluation
Display Alternatives & Scientific Visualization

Reading
Chapters 3, 4, & 5

Week 3
Electromagnetic Radiation Principles and Radiometric Correction
Geometric Correction
Research Paper Abstract Due

Reading
Chapters 6 & 7

Week 4
Image Enhancement

Reading
Chapter 8

Week 5

Reading
Thematic Information Extraction: Pattern Recognition
Mid-term Knowledge Check
Chapter 9

Week 6
Information Extraction Using Artificial Intelligence
Chapter 10

Week 7
Information Extraction Using Spectroscopy
Change Detection
Research Papers due

Reading
Chapters 11 & 12

Week 8
Remote Sensing-Derived Thematic Map Accuracy Assessment
Individual Research Presentations

Reading
Chapter 13

Week 9
Final Knowledge Check
Course Critiques

Reading
None
Course Policies

Availability of Instructor

The professor is available by appointment. Students are encouraged to use e-mail as the primary means of interacting with the professor. Please use your Webster University email account with the course number and "Webster" included in the subject line. If any student needs to contact the professor for an immediate situation/emergency, a phone number is provided on page one of the syllabus. If the professor is unavailable when the student's call is placed, the student should leave a voice message with his/her name, phone number, and the best time to return their call. The professor will make contact as soon as possible.

Course Attendance

Students are expected to participate in each weekly session. In the case of unavoidable absence, the student must contact the instructor prior to the week. The student is subject to the appropriate academic penalty for incomplete or unacceptable makeup work, or for excessive or unexcused absences. Generally, a student who misses more than a one week course period (per course) without a documented military or medical excuse and advanced permission from the instructor should withdraw from the class.

Institutional Policies

Academic Policies

Academic policies provide students with important rights and responsibilities. Students are expected to familiarize themselves with all academic policies that apply to them. Academic policies for undergraduate students can be found in the Undergraduate Studies Catalog; graduate students should review the Graduate Studies Catalog.

Undergraduate Studies Catalog

The Undergraduate Studies Catalog contains academic policies that apply to all undergraduate students. The academic policies and information section of the catalog contains important information related to attendance, conduct, academic honesty, grades, and more. If you are an undergraduate student, please review the catalog each academic year. The current Undergraduate Studies Catalog is at:

http://www.webster.edu/catalog/current/undergraduate-catalog/

Graduate Studies Catalog

The Graduate Studies Catalog contains academic policies that apply to all graduate students. The academic policies section of the catalog contains important information related to conduct, academic honesty, grades, and more. If you are a graduate student, please review the catalog each academic year. The current Graduate Studies Catalog is at:

http://www.webster.edu/catalog/current/graduate-catalog/

Grading

The Grades section of the academic catalog outlines the various grading systems courses may use, including the information about the final grade reported for this class.

Undergraduate

http://www.webster.edu/catalog/current/undergraduate-catalog/academic-policies.html#grading

Graduate

http://www.webster.edu/catalog/current/graduate-catalog/academic-policies.html#grades

Incomplete

There are important policies that govern grades of Incomplete (I), including the circumstances under which Incomplete grades are granted, deadlines for completion, and consequences should the remaining course work not be completed. It is the responsibility of a student who requests an Incomplete to ensure that he/she understands and follows the policies.

Grade Appeals

Instructors are responsible for assigning grades, and student should discuss grade issues with the instructor. Policies and procedures for appealing grades are available in the appropriate catalog.

Academic Honesty Policy
Webster University is committed to academic excellence. As part of our Statement of Ethics, we strive to preserve academic honor and integrity by repudiating all forms of academic and intellectual dishonesty, including cheating, plagiarism and all other forms of academic dishonesty. Academic dishonesty is unacceptable and is subject to a disciplinary response. Students are encouraged to talk to instructors about any questions they may have regarding how to properly credit others' work, including paraphrasing, quoting, and citation formatting. The university reserves the right to utilize electronic databases, such as Turnitin.com, to assist faculty and students with their academic work.

The University's Academic Honesty Policy is published in academic catalogs:

Undergraduate
http://www.webster.edu/catalog/current/undergraduate-catalog/academic-policies.html

Graduate
http://www.webster.edu/catalog/current/graduate-catalog/academic-policies.html

As a part of the University commitment to academic excellence, the Academic Resource Center provides student resources to become better acquainted with academic honesty and the tools to prevent plagiarism in its many forms:

http://www.webster.edu/arc/plagiarism_prevention/

Statement of Ethics
Webster University strives to be a center of academic excellence. The University makes every effort to ensure the following:

- The opportunity for students to learn and inquire freely
- The protection of intellectual freedom and the rights of professors to teach
- The advancement of knowledge through scholarly pursuits and relevant dialogue

To review Webster University's statement of ethics, see the Undergraduate Studies Catalog and the Graduate and Studies Catalog:

Undergraduate
http://www.webster.edu/catalog/current/undergraduate-catalog/overview.html#ethics

Graduate
http://www.webster.edu/catalog/current/graduate-catalog/ethics.html

Contact Hours for this Course
It is essential that all classes meet for the full instructional time as scheduled. A class cannot be shortened in length. If a class session is cancelled for any reason, the content must be covered at another time.

Important Academic Resources
Academic Accommodations
Webster University makes every effort to accommodate individuals with academic/learning, health, physical and psychological disabilities. To obtain accommodations, students must identify themselves and provide documentation from a qualified professional or agency to the appropriate campus designee or the Academic ADA Coordinator at the main campus. The Academic ADA Coordinator may be reached at 314-246-7700 or disability@webster.edu.

If you have already identified as a student with a documented disability and are entitled to classroom or testing accommodations, please inform the instructor of the accommodations you will require for this class at the beginning of the course.

Academic Resource Center
Additional support and resources may be accessed through the Academic Resource Center (ARC). Support and resources include academic counseling, accommodations, assistive technology, peer tutoring, plagiarism prevention, testing center services, and writing coaching. Visit www.webster.edu/arc or Loretto Hall 40 on the main campus for more information.

Student Success Portal
Webster University's Student Success Portal, powered by Starfish, is a communications tool to connect students with faculty members and campus support services. It allows faculty and staff members to communicate with you regarding academic achievements as well as areas where support may be helpful. You may use the portal to contact faculty and staff members for assistance and to arrange
meetings. Activity in the portal will be communicated to your Webster University email account. The Student Success Portal is available via your course home page in WorldClassRoom or via Connections. Learn more about the Student Success Portal at [http://www.webster.edu/success/students.html](http://www.webster.edu/success/students.html).

University Library

Webster University Library is dedicated to supporting the research needs and intellectual pursuits of students throughout the University's worldwide network. Resources include print and electronic books, journal articles, online databases, DVDs and streaming video, CDs and streaming music, datasets, and other specialized information. Services include providing materials at no cost and research help for basic questions to in-depth exploration of resources. The gateway to all of these resources and services is [http://library.webster.edu](http://library.webster.edu). For support navigating the library's resources, see [http://libanswers.webster.edu/](http://libanswers.webster.edu/) for the many ways to contact library staff.

Drops and Withdrawals

Drop and withdrawal policies dictate processes for students who wish to unenroll from a course. Students must take proactive steps to unenroll; informing the instructor is not sufficient, nor is failing to attend. In the early days of the term or semester, students may DROP a course with no notation on their student record. After the DROP deadline, students may WITHDRAW from a course; in the case of a WITHDRAW, a grade of W appears on the student record. After the WITHDRAW deadline, students may not unenroll from a course. Policies and a calendar of deadlines for DROP and WITHDRAW are at:


Graduate [http://www.webster.edu/catalog/current/graduate-catalog/enrollment.html](http://www.webster.edu/catalog/current/graduate-catalog/enrollment.html)

Academic Calendar - [http://www.webster.edu/academics/academic-calendar/](http://www.webster.edu/academics/academic-calendar/)

Current tuition rates, policies, and procedures, including details of pro-rated tuition refunds, are available in the “Tuition, Fees, and Refunds” section of Webster’s Academic Catalogs:

Undergraduate [http://www.webster.edu/catalog/current/undergraduate-catalog/tuition.html](http://www.webster.edu/catalog/current/undergraduate-catalog/tuition.html)

Graduate [http://www.webster.edu/catalog/current/graduate-catalog/tuition.html](http://www.webster.edu/catalog/current/graduate-catalog/tuition.html)

Student Handbook and Other Important Policies

Student handbook and other non-academic policies may apply to you and may impact your experience in this class. Such policies include the student code of conduct, privacy, technology and communications, and more. Please review the handbook each year and be aware of policies that apply to you. The handbook is available at:


Sexual Assault, Harassment, and Other Sexual Offenses

Webster University makes every effort to educate the community to prevent sexual assault, harassment, and other sexual offenses from occurring, and is committed to providing support to those affected when this behavior does occur. To access information and resources or to review the Policy on Sexual Assault, Harassment, and Other Sexual Offenses, visit:

[http://www.webster.edu/sexual-misconduct/](http://www.webster.edu/sexual-misconduct/)

Research on Human Subjects

The Webster University Institutional Review Committee (IRB) is responsible for the review of all research on human subjects. The IRB process applies to all Webster University faculty, staff, and students and must be completed prior to any contact with human subjects. For more information on the IRB, visit:

[http://www.webster.edu/irb/index.html](http://www.webster.edu/irb/index.html)

Course Evaluations
At the end of this course, you will have the opportunity to provide feedback about your experience. Your input is extremely valuable to the university, your instructor, and the department that offers this course. Please provide your honest and thoughtful evaluation, as it helps the university to provide the best experience possible for all of its students.

**Important Technology Information**

**Connections Accounts**

Webster University provides all students, faculty, and staff with a University email account through Connections. Students are expected to activate their Connections account and regularly check incoming University email. Students may choose to have their University email forwarded to an alternate email address. Connections account holders can call the Help Desk (314-246-5995 or toll free at 1-866-435-7270) for assistance with this setup. Instructions are also provided on the Information Technology website at:

http://www.webster.edu/technology/service-desk/

**WorldClassRoom**

WorldClassRoom is Webster’s Learning Content Management System (LMS). Your instructor may use WorldClassRoom to deliver important information, to hold class activities, to communicate grades and feedback, and more. WorldClassRoom is available using your Connections ID at:

https://worldclassroom.webster.edu/

**Webster Alerts**

Webster Alerts is the University’s preferred emergency mass notification service, available free to current students, faculty and staff at all US campuses. By registering a valid cell phone number and email address, you will receive urgent campus text, voice mail and email communications. Valuable information concerning a range of incidents affecting you - from weather-related campus closures, class delays and cancellations, to more serious or life-threatening events - are immediately and simultaneously delivered through multiple communication channels. To register for Webster Alerts, visit:

http://www.webster.edu/technology/services/webster-alerts/