Nova Southeastern University
Oceanographic Center

Course Syllabus (Fall II 2012)

Last Date Revised: 19 April 2012

I. COURSE NUMBER AND TITLE:

Environmental Remote Sensing and Geographic Information Systems
Course Number:
Days: Daily, December 2-15, 2013 from 9 am – 1 pm

Building & Room: Forman computer lab.

II. INSTRUCTOR:

Sam Purkis, Ph.D.
Phone: 954-262-3647                          Email: Purkis@nova.edu
Office: 221 Forman Bldg.
Office Hours: 10:00 am – 1:00 pm, Daily.

III. COURSE DESCRIPTION:

This course assumes that you have an interest in Remote Sensing and large-scale Earth observation. It is not intended to matter whether you consider yourself a chemist, physicist, biologist, geologist or geographer. The intention is to present Remote Sensing (RS) and Geographic Information System (GIS) as a tool for studying the Earth and its processes. The course is designed to be accessible to anyone with a reasonable grounding in the Earth Sciences and is tuned to give a general induction to a wide scope of relevant topics. Nonetheless, you must be prepared to grapple with some basic ideas of Physics. The syllabus introduces electromagnetic radiation principles in the context of Earth observation and presents an overview of the current status of both active and passive air- and space-borne RS systems. Having followed a typical processing-stream required to extract quantitative information from satellite imagery, the student is introduced to the field of GIS through specific environmental case-studies. Image calibration, geo-rectification and classification are dealt with by providing a grounding in the theory underlying image processing. Remote Sensing is not about interesting pictures of the Earth’s surface, although there are some spectacular images to be discovered. It is really about careful, precise measurements of surface parameters, including the techniques and methodology, the scientific principles behind the techniques and the ‘real-world’ application of the technology.
IV. LEARNING OUTCOMES:

At the conclusion of this course the student will be able to:

1). The students will be taught the fundamentals of GIS, its potential as well as its limitations. Remote sensing is presented as an integral part of the GIS hierarchy and introduced using both marine and terrestrial examples.

2). Through the course the student will be installed with a broad and comprehensive understanding of remote Earth-observation, and will become familiar with the suite of sensors currently used for routine environmental monitoring.

3). The course is both classroom- and lab-based in order that participants have the opportunity to familiarize themselves with the industry-standard software’s used for remote sensing and GIS. Upon completing the course, each student will be able to complete a wide range of tasks using ESRI Arc GIS, and ENVI.

4). Through tailored lab-exercises, each student will have ample opportunity to conduct case studies to answer specific environmental questions. The case studies cover a complete processing stream, from image acquisition, pre-processing, processing and finally, critical evaluation of the utility of the final map product. This experience will allow students to take what they have learnt from the course and apply GIS and spatial-analysis to their own projects.

V. REQUIRED TEXTS AND MATERIALS:

VI. COURSE SCHEDULE AND TOPIC OUTLINE:

To Be Determined

Note: This is a tentative schedule that may be changed. Students will be provided a minimum one week advance notice of any change when possible.

VII. GRADING CRITERIA:

The lab tutorials will contribute 20% of the mark. Homework will provide an additional 30% and the Final Exam the remaining 50%.

The final exam will offer 100 marks partitioned between short and long answer questions.

VII. COURSE REQUIREMENTS AND POLICIES:

INSTRUCTIONAL APPROACH

My office hours will be from 10:00 am – 1:00 pm, Daily to make myself available for questions, tutoring, or counseling outside of class time. I will also be available at other times by appointment in advance. I use a motivational, challenging, and enthusiastic teaching approach, and I encourage you to communicate with me as frequently as you prefer or require. Please note that pursuant to Nova Southeastern University policy, I will only respond to email coming from your NSU email account. I cannot respond to email sent from a hotmail, msn, yahoo, etc. email account.

I encourage questions during lecture, and will stop lecture until you are satisfied that your question has been answered. If a conflict should arise, please come and speak with me as soon as possible. I am willing to negotiate a mutually agreeable resolution to any problems.

ATTENDANCE

Attendance will be taken during every lecture. This is primarily a tool that allows me to learn your names rapidly. However, I will notice those who do not attend regularly, and I reserve the right to penalize those who do not attend by not granting favors or “arguing for points” after exams. If you miss a lecture YOU are responsible for the material.

ACADEMIC HONESTY

In order to ensure the highest standards of academic honesty and ethical behavior, the NSU policies on cheating and plagiarism will be strictly enforced. See the NSU Student Handbook for more information at http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf. I am empowered by the policy to penalize a student suspected of academic dishonesty, plagiarism, or otherwise misrepresenting work and I will do so and report that student to the Dean of the OC.
Nova Southeastern University has contracted with turnitin.com to provide plagiarism detection services, and I will submit any suspicious documents to this service.

The use of cell phones, or any other electronic devices not specifically allowed by me, during an exam is not permitted. The use of such devices for any reason will be assumed to be for the purposes of cheating and will result in your dismissal from class and administrative action up to permanent expulsion from all NSUOC programs. If you need the phone for emergency notifications, or the like, leave the phone with me or the proctor at the start of class. You will be immediately notified if there is an incoming call.

**EXPECTATIONS**

You can expect that I will arrive on time for lectures and be well prepared. You can expect that I will be clear about my expectations and the criteria I use in assigning grades and that I will be fair and equitable. I will treat everyone in the class with consideration and respect.

I expect you to come to class, arrive on time, and be prepared for lecture and lab. I expect you to turn off your cell phones, pagers, and hand-held electronic devices as a gesture of reciprocal respect. If you bring a computer to class, I expect you to use it to take notes and record classroom information. I expect you to stay awake, take notes, participate in discussions and ask questions. I expect you to turn in your assignments on time and in good condition.

**KEYS TO SUCCESS**

In order to maximize your performance in this course, I suggest that you attend every lecture, pay close attention, take good notes, and participate in the discussion. Later, rewrite your class notes in order to ensure that you understand everything. Do not hesitate to come to me with questions or concerns about past lecture material.

It is generally a good idea to read the appropriate chapters in the textbooks prior to the lecture. This will facilitate your comprehension and organization of the lecture material. When rewriting your lectures, refer again to the textbook to check the correct spelling of terms, the logical sequence of events, and/or difficult concepts.

For some of you, studying together in groups will be a very productive approach. Talking about the material, quizzing each other about the material, and sharing time exploring the material builds your interest and comprehension, and makes learning fun.

**X: UNIVERSITY-WIDE POLICY STATEMENTS**

A. **Academic Misconduct:** Academic misconduct appears in a variety of forms (including plagiarism). It is a violation of NSU academic policy and may be punished in a variety of ways, from failing the assignment and/or the entire course to academic probation, suspension or
expulsion. If you have questions about what constitutes academic misconduct before handing in an assignment, see your instructor or the NSU Student Handbook at http://www.nova.edu/cwis/studentaffairs/forms/ustudenthandbook.pdf.

B. **ADA Policy:** Nova Southeastern University provides accommodations for students with documented disabilities. If you have a disability for which you believe you require accommodation, please contact Academic Services (http://www.nova.edu/disabilityservices/, 954-262-7189).

C. **Last Day to Withdraw:** It is your responsibility to formally withdraw from this course by completing the appropriate forms before the fourth week of the quarter in order to receive a partial refund (http://www.nova.edu/ocean/coursepolicy.html). A request for tuition refund must be made in writing at the time of withdrawal. Refunds will be made solely at the option of the university and will be based on the legitimacy of the reason for withdrawal. Should you fail to appropriately withdraw from this course, and then earn a grade below your expectations, I will do what I can to see that the grade is reported on your transcript. I will NOT backdate paperwork so that you can avoid earning a grade lower than you like.

D. **Email Policy:** All email communications between students and faculty must be conducted via NSU email accounts (http://www.nova.edu/common-lib/policies/emailcomm.policy.html). This requirement will assist NSU in communicating more effectively and protecting your privacy. Emails sent to faculty from non-NSU accounts will be returned to the sender with instructions to resend the communication from your NSU account. To set up an NSU email account or to get help with an existing account, go to https://www.nova.edu/sbin/account_request. Also, the computer help desk is available to assist you with questions regarding your NSU email account. It can be reached at 954-262-HELP (4357).

E. **Student Course Evaluations:** Student comment and feedback evaluating each college class is an important tool to evaluate program effectiveness. Participation in this process is a responsibility of each student.