DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL MANAGEMENT AND ENERGY STUDIES

FACULTY OF SCIENCE
UNIVERSITY OF JOHANNESBURG

POST-GRADUATE COURSE IN REMOTE SENSING (S2RSEQ2)
(A SAQA registered course)

LEARNING GUIDE (LG)
SECOND SEMESTER - 2017

Module/ Course Title: Post-graduate course in remote sensing
Module / Course Code: S2RSEQ2
Module / Course Credit Value: 30
National Qualifications Framework (NQF) Level: 7
Name of Lecturer: Dr. S.G. Tesfamichael
Name of Module / Course Coordinator: Dr. S.G. Tesfamichael
1. **Purpose of the Qualification**

The course is an NQF level 7 module that runs for a semester (14 weeks). The course aims to familiarize postgraduate students with applications of remote sensing to a wide range of study fields that have direct or indirect relevance to geographical and environmental forms and processes. This is essential in stimulating geographical and environmental science thinking and research that applies state-of-the-art spatial technologies.

The course is intended to equip students with the skill to design, undertake and report academic research efforts that relate to remote sensing techniques. Students are thus expected to work towards being self-motivated readers, inquisitive of ideas and critical reviewers of academic/scientific evidences. It is therefore vital that they allocate substantial amount of time to gain an in-depth understanding of the subject matters covered in the course. This is achieved through knowledge absorption in both the theories and practical applications of remote sensing and spatial analysis techniques.

2. **Academic requirements**

Students who intend to register for the course are required to have a recognized Bachelor’s degree or equivalent qualification, preferably with prior knowledge of Geographic Information System, spatial analysis, remote sensing or aerial photography in undergraduate studies.

3. **Course content**

The contents below are informed by the predominant experience in the learning-teaching of remote sensing techniques worldwide. This experience essentially promotes equipping students with the principles and applications of remote sensing in a plethora of geographical and environmental forms and processes. In doing so, the course strives to keep students abreast with the current technological advances of remote sensing and its applications. To this end, adjustments to the contents may be made whenever necessary.

**Theme 1: Basic principles of electromagnetic radiation**

- Components of remote sensing
- Electromagnetic energy
- Interaction of electromagnetic energy and targets on Earth’s surface

**Theme 2: Characteristics of remotely-sensed data**

- Active and passive remote sensing
- Sensors
- Spatial, spectral, radiometric, temporal resolutions

**Theme 3: Earth observation sensors**

- Weather monitoring systems
- Coastal observation sensors
- Land observing sensors

**Theme 4: Image analysis and interpretation**
- Image preprocessing
- Supervised / unsupervised classification
- Interpretation
- Accuracy assessment

**Theme 5: Applications of multispectral / hyperspectral remote sensing**
- Agriculture
- Vegetation / forest characterization
- Water quality
- Urban environment
- Mining

**Theme 6: Applications of lidar / radar remote sensing**
- Vegetation biophysical assessment
- Urban environment

4. **Fees**

When taken as a non-graduate course, the course fee is R8000.00 (Eight thousand rand only) for 2017 and is payable in advance during registration (If a student discontinue a percentage of this fee can be refunded depending on the date of discontinuation).

Please take note that if your place of employment is going to pay the fees that all arrangements for these payments must be made by yourself, and that if the employer pays the amount via a bank transfer it must be accompanied with a letter to the Finance department of UJ that states that the payment was made to the benefit of your student number.

5. **Application**

Applications to attend the course during the **second semester** must reach the course coordinator before or on **July 17, 2017 for 2017**. Applications can be made by e-mail or fax, in which the following must be stated:

Name, I. D. number, address, telephone number, highest academic qualification and place acquired, work experience, and current occupation as well as relevant institution. **Include a copy of your previous study record.**

Please take notice of the fact that the university might charge a further administrative fee towards new students not previously enrolled at this university towards the process of input of personal data onto the computer system.
To submit an application for enrolment to the course or for further information, contact:

Dr Solomon G. Tesfamichael  
Course coordinator  
Dept. of Geography, Environmental Management and Energy Studies  
University of Johannesburg  
P.O. Box 524  
Auckland Park  
2006  
Tel. No. (011) 559-3927  
Fax. No (011) 559-2430  
E-mail: sgtesfamichael@uj.ac.za

**TAKE NOTE OF THE FOLLOWING ARRANGEMENTS FOR 2017:**

**Enrolment:**

Takes place in office 'D2LAB344H' of the Department of Geography, Environmental Management and Energy Studies.

Date: 17/07/2017 – 24/07/2017    Time: 9:00 – 12:30    Place: D2 LAB 344H

Fill in the attached form for enrolment purposes and fax or post it to the above-mentioned address and bring the original along on the date of enrolment. The enrolment will be faster if you in the meantime fill in an application form for study at the university and submit it in order to get a student number (students not previously studying at UJ).

**First lecture:**

**Date:** July 25, 2017    **Time:** 13:00    **Place:** D3 LAB 332

**All persons who want to enrol for this course must:**

- Fill in a formal application form (obtainable from the registration offices at the university) and send this form in to reach the course co-ordinator not later than 17/7/2017.
- Submit the following at registration:
  - Student record of previous study (certified copy)
  - A signed form of declaration

At the day of registration students must:

1. bring along all the above-mentioned documents and obtain signature from course coordinator in D2 LAB 344 H,
2. pay the full course fee at the UJ Cashier,
3. then, hand in a copy of the payment receipt to Mr. Tinyiko Andrew Sithole (Faculty of Science, C Ring 203), get registered for the course and receive a print-out of proof of registration. (This might be available only at the first lecture).
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL MANAGEMENT AND ENERGY STUDIES

REGISTRATION FOR CERTIFICATE IN GEO-INFORMATICS 2 (S2RSEQ2)
(Second semester 2017 – Part time)
FOR CERTIFICATE PURPOSES

SURNAME: ___________________________ Title: _____ ID Number: __________________

NAMES: _______________________________________________________________

Courses previously done at UJ? Yes/No____ UJ Student Number: __________________

Name(s) of course(s) and date: _______________________________________________

ACADEMIC QUALIFICATIONS (PLACE THE NAME OF THE INSTITUTION AT THE END IN BRACKETS):

_________________________________________________________________________

_________________________________________________________________________

HOME ADDRESS: ______________________ | (PROVIDE POSTAL ADDRESS IF IT IS DIFFERENT)

_________________________________________________________________________

_________________________________________________________________________

TEL. NO: (___) _______________________

WORK ADDRESS: ______________________

_________________________________________________________________________

TEL. NO: (___) _______________________

FAX NO: (___) _______________________

I, ________________________________________, hereby declare that I will adhere to the general university regulations and the specific regulations of the Department of Geography, Environmental Management and Energy Studies, especially those applicable to the computers and software, and undertake to pay the course fee of R8000.00 in full at registration for the course at the UJ CASHIER and only after an official student number has been allocated to me.

NB!! All payments must be made with reference towards your student number, if arranged with your employer to pay the course fee.

Student

SIGNATURE (Student) ___________________ DATE _________________

Course coordinator
ACCEPTED (Name): ___________________ SIGNATURE ___________________