



**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 - 2020**

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 Lecturers: Prof. S.G. Tesfamichael and Ms. Thendo Mugwena

Name of Module / Course Coordinator: Prof. 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 R9500.00 (Nine thousand rand only) for 2020 and is payable in advance during registration (If a student discontinues 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. If the employer pays the amount via a bank transfer it must be accompanied with a letter to the Finance department of UJ stating that, the payment was made to the benefit of your student number.

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.

5. Application

The application form to enrol for the course is attached at the last page of this document. Applications to attend the course during the **second semester** must reach the course coordinator before or on **July 13, 2020 for 2020**. Applications can be made by e-mail or fax given below and must be accompanied by certified copies of previous academic records. You will then receive a notification on the success of your application.

To submit an application for enrolment to the course or for further information, contact:

Prof 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 (preferred during the national lockdown)

TAKE NOTE OF THE FOLLOWING ARRANGEMENTS FOR 2020:

Enrolment:

Enrolment for accepted applicants takes place as follows:

- Department: Geography, Environmental Management and Energy Studies.
- Place: D2 LAB 344H
- Date: 14/07/2020 – 21/07/2020
- Time: 9:00 – 12:30

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 21, 2020
- Time: 13:00 – 17:00
- Place: D3 LAB 332

Mode of lecture:

- Sessions may combine in-person and via online methods, taking into account the current COVID-19 pandemic.
- Mode of lecture will be communicated and updated regularly by the lecturers during the course of the semester.



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**REGISTRATION FOR CERTIFICATE IN GEO-INFORMATICS 2 (S2RSEQ2)
(Second semester 2020 – 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 R9500.00 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 _____