The University of Southern Queensland

Course specification

Description: Photogrammetry and Remote Sensing

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVY</td>
<td>3202</td>
<td>30966</td>
<td>1, 2004</td>
<td>ONC</td>
<td>1.00</td>
<td>TWMBA</td>
</tr>
</tbody>
</table>

Academic group: FOENS
Academic org: FOES05
Student contribution band: 2
ASCED code: 031199

STAFFING

Examiner: Frank Young
Moderator: Armando Apan

RATIONALE

There is increased and wider use being made of remotely sensed data from terrestrial and aerial photogrammetry, laser scanners and satellite sensed data, to gather information for geographic information systems. Computer and electronic technology advances are continually increasing the availability, variety and usefulness of this photogrammetric and satellite sensed data, increasing its importance within the information industry. It is necessary for the modern surveyor to be aware of the methods of acquisition of these data forms, their accuracies and precision, their uses and the relative economics compared to other surveying techniques.

SYNOPSIS

This course will enable students to extract, interpret and evaluate data from aerial photographs, terrestrial photographs and laser scanned images. This data will be presented and related to the environment or integrated with other data forms for direct application or information system storage. This course will also develop the students understanding of the physical basis and properties of remotely sensed data. During the investigation of applications of this satellite sensed data, students will develop basic skills and knowledge in extracting, manipulating, interpreting, analysing and presenting this data.

OBJECTIVES

On successful completion of this course students will be able to demonstrate an understanding of:

- the basic principles, theory and accuracy of various aerial and terrestrial photogrammetric methods;
- the design of photogrammetric surveys;
the methodologies and techniques using analytical or digital photogrammetric equipment, to extract information from photographs;
the application of photogrammetric methods to topographic mapping, engineering projects and information gathering for geographic information systems;
the accuracies and application of laser imaging;
the principles of remote sensing and possible applications;
the physical basis of remote sensing; these include spectral, temporal, spatial and resolution properties; the spectrum and its radiation and reflectance properties; and image properties;
the type of sensing systems and platforms used, and the characteristics of those systems;
the characteristics of the available film/hard copy and digital data formats;
the requirement and processes involved in image processing and restoration;
the process to carry out image enhancement and classification;
the process to extract information from the remotely sensed data;
the cartographic properties and application of the data and specific applications of the information.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aerial photogrammetry</td>
<td>15.00</td>
</tr>
<tr>
<td>2. Terrestrial photogrammetry</td>
<td>10.00</td>
</tr>
<tr>
<td>3. Project planning</td>
<td>5.00</td>
</tr>
<tr>
<td>4. Photogrammetric data acquisition and computations</td>
<td>25.00</td>
</tr>
<tr>
<td>5. Laser imaging principles and techniques</td>
<td>5.00</td>
</tr>
<tr>
<td>6. Remote sensing principles</td>
<td>15.00</td>
</tr>
<tr>
<td>7. Data acquisition methods, platforms and sensor systems</td>
<td>10.00</td>
</tr>
<tr>
<td>8. Image interpretation</td>
<td>10.00</td>
</tr>
<tr>
<td>9. Application and SIS usage</td>
<td>5.00</td>
</tr>
</tbody>
</table>

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

REFERENCE MATERIALS:

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Refer to selected Bibliography, Module 1 of SVY3202 Photogrammetry and Remote Sensing, USQ Study Notes, 2002.

(Library 621.3678 Cur)

(Library 621.3678 Har)

(Library 621.3678 Lil)


(Library 621.3678 Ree)

(Library 526.982 Wol)

STUDENT WORKLOAD REQUIREMENTS:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>20.00</td>
</tr>
<tr>
<td>Examinations</td>
<td>3.00</td>
</tr>
<tr>
<td>Lectures</td>
<td>13.00</td>
</tr>
<tr>
<td>Private Study</td>
<td>80.00</td>
</tr>
<tr>
<td>Tutorial</td>
<td>39.00</td>
</tr>
</tbody>
</table>

ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>200.00</td>
<td>20.00</td>
<td>04 May 2004</td>
</tr>
<tr>
<td>ASSIGNMENT 2</td>
<td>200.00</td>
<td>20.00</td>
<td>07 Jun 2004</td>
</tr>
<tr>
<td>3 HOUR CLOSED EXAMINATION</td>
<td>600.00</td>
<td>60.00</td>
<td>END S1 (see note 1)</td>
</tr>
</tbody>
</table>
NOTES:
1. Student Administration will advise students of the dates of their examinations during the semester.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2 Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for each assessment item.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 20% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   (i) To be assured of receiving a passing grade a student must achieve at least 45% in each of the summative assessments and at least 50% of the available weighted marks for the summative assessment items. (ii) Students who do not qualify for a Passing grade may, at the discretion of the Examiner, be assigned work to demonstrate to the Examiner that they have achieved the required standard. It is expected that such students will have gained at least 45% of the total marks available for all summative assessment items.

5 Method used to combine assessment results to attain final grade:
   The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
   In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/corporateservices/calendar/part5.htm or in the current USQ Handbook.
ASSESSMENT NOTES

1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

2 Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.

3 In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.

4 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media.

5 The Faculty will NOT accept submission of assignments by facsimile.

6 Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.

7 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

8 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded one of the temporary grades: IM (Incomplete - Make up), IS (Incomplete - Supplementary Examination) or ISM (Incomplete -Supplementary Examination and Make up). A temporary grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non directed personal study.

9 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).