Description: Telecommunications Systems

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<th>Subject</th>
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<th>Term</th>
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Academic group: FOENS
Academic org: FOES04
HECS band: 2
ASCED code: 031307

STAFFING
Examiner: Bruce Varnes
Moderator: Jim Ball

PRE-REQUISITES
Pre-requisite: ELE2601 and ELE2702

SYNOPSIS
Electronic communications systems are an essential part of the modern world. This course examines in some detail a number of typical electronic communications systems and introduces techniques appropriate for systems operating in the microwave region beyond 1 GHz. It examines the nature of signals appropriate to such systems and how the signals are transmitted from one point to another. Various multichannel systems capable of transmitting video, voice or data signals are introduced. Systems using terrestrial radio links, satellite radio links and optical fibre networks are covered. The basic principles of colour television are introduced. Some of the topics studied in the prerequisite course are expanded. These include signals and noise, modulation techniques, transmission lines, radio- wave propagation and antennas.

OBJECTIVES
On completion of this course, students should be able to:

- describe in detail the principles on which selected modern communication systems operate;
- analyse the operation of representative communication circuits and systems using block diagrams and written explanations;
- predict or evaluate system parameters for particular applications;
- compare alternative system configurations for achieving the same result;
- evaluate the suitability of a selected communication system for its intended purpose.
### TOPICS

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<th>Description</th>
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<tr>
<td>1. The nature of signals and noise</td>
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<td>2. Advanced modulation principles</td>
<td>10.00</td>
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<td>3. Multi-channel systems</td>
<td>15.00</td>
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<td>4. Television</td>
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<td>5. Transmission lines</td>
<td>5.00</td>
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<td>6. Radio-wave propagation</td>
<td>5.00</td>
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<td>7. Antennas</td>
<td>5.00</td>
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<td>8. Microwave and optical techniques</td>
<td>10.00</td>
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<td>9. Satellite communications</td>
<td>10.00</td>
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<td>10. Data communications</td>
<td>5.00</td>
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<td>11. Other topics</td>
<td>15.00</td>
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**TEXT and MATERIALS required to be PURCHASED or ACCESSED:**

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

*ELE2603 Telecommunications Systems External Study Package*, USQ Publication,

A calculator which cannot hold textual information


**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.

STUDENT WORKLOAD REQUIREMENTS:

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<th>ACTIVITY</th>
<th>HOURS</th>
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<tr>
<td>Examinations</td>
<td>3</td>
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<tr>
<td>Lectures</td>
<td>26</td>
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<tr>
<td>Private Study</td>
<td>70</td>
</tr>
<tr>
<td>Report Writing</td>
<td>30</td>
</tr>
<tr>
<td>Tutorial</td>
<td>26</td>
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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:
   (i) To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for each assignment. (ii) To complete the examination satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for the examination.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 5% of the total marks gained by the student for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and assignments; and (ii) obtaining at least 50% of the total weighted 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 Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during 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/SECARIAT/calendar/Part5/ or in the printed version of 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 despatched to USQ within 24 hours 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).

OTHER REQUIREMENTS

1. Students will require access to e-mail and internet access to USQConnect for this course.