Description: Human Factors

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<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
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<td>1, 2004</td>
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Academic group: FOSCI
Academic org: FOS005
Student contribution band: 1
ASCED code: 090701

STAFFING
Examiner: Gerry Fogarty
Moderator: Tony Machin

REQUISITES
Pre-requisite: PSY1010 and PSY1020 and PSY2040 and PSY2100 and PSY2110

RATIONALE
Engineers are highly skilled at designing and developing systems to perform functions formerly carried out by humans. There is no doubt that many of these systems are more reliable and more efficient than the systems they replace and that they create new opportunities and new experiences, both for work and leisure. However, catastrophic industrial accidents and the mounting cost of workers' compensation claims are warning signs that technology may be stretching the limits of the human operator. Human factors is a branch of psychology that explores psychological factors that impact on a system's usability. The course is placed at the third year level because it draws upon psychological theories and principles introduced in level 1 and level 2. The aim of the course is to review this earlier work and to introduce new materials that will demonstrate how the study of human factors can contribute to the goals of improving safety, raising productivity, and improving quality of life.

SYNOPSIS
The course begins with an historical overview of the interface between psychology and work and the consequent growth of human factors/engineering psychology. Research methodology plays a big part in human factors, indeed it is a theme that runs through the whole course, so there is some early coverage of statistics and methods, but no more than has already been covered in PSY2100 and PSY2110. Sections on human sensory systems, cognition, and human physiology emphasise the importance of understanding the limitation of these systems from a human-machine interface perspective. The approach taken involves
reviewing a topic (e.g., perception), describing the limitations in human systems for machine and software design, followed by coverage of the design process itself. The final section of the course applies the principles of human factors to fields such as automation, transportation, medicine, and training with a view to explaining much of the problem behaviour we observe in these fields and using human factors principles to bring about improvements.

OBJECTIVES

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

- demonstrate an understanding of human factors as a science;
- apply design and evaluation methods used in human factors engineering;
- describe the implications of limitations in the human sensory and cognitive systems;
- apply the principles governing auditory and visual displays;
- apply the basic principles of ergonomic workplace design;
- recognise poor designs and unsatisfactory work systems;
- identify issues related to stress and fatigue in the workplace;
- identify issues related to safety and accidents;
- trace the various sources of human error;
- apply the basic principles of computer-human interface design; and
- describe the advantages and disadvantages of automation.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>1. Introduction to Human Factors</td>
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<td>2. Human Sensory Systems</td>
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<td>3. Cognition and Decision Making</td>
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<td>4. Display Design</td>
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<td>5. Anthropometry and Ergonomic Workplace Design</td>
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<td>6. Stress, Fatigue, Safety, and Errors</td>
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<td>7. Human Computer-Interaction</td>
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<td>8. Automation</td>
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<td>9. Human factors in transportation and medicine</td>
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<td>10. Selection and training issues</td>
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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.

, , *Ergonomics,*
(The official publication of the Ergonomics Research Society)

, , *Human Factors,*


**STUDENT WORKLOAD REQUIREMENTS:**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
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<td>Examinations</td>
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**ASSESSMENT DETAILS**

<table>
<thead>
<tr>
<th>Description</th>
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<th>Wtg(%)</th>
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<tr>
<td>ASSIGNMENT 1</td>
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<td>30.00</td>
<td>14 May 2004</td>
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<td>ACTIVITIES</td>
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<td>10.00</td>
<td>11 Jun 2004</td>
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<tr>
<td>2HR RESTRICTED EXAM</td>
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<td>60.00</td>
<td>END S1</td>
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(see note 1)
NOTES:

1. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

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 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 10% 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:
   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. Students who do not qualify for a Passing grade may, at the discretion of the Examiner, be awarded a Supplementary Examination and/or assigned additional 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 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; English translation dictionaries (but not technical dictionaries); Formula sheets. Students whose first language is not English, may, with the Examiner's approval, take an appropriate non- electronic translation dictionary into the examination. Students who wish to use a translation dictionary MUST request and receive written approval from the Examiner at least one week before the examination date. Translation dictionaries will be subject to perusal and may be
removed from the candidate's possession until appropriate disciplinary action is completed if found to contain material that could give the candidate an unfair advantage.

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

9 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.

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

11 As there are resources cited in the Study Materials which are available on the World Wide Web, and a discussion group that will be used throughout the course, it is essential that students undertaking this course have access to computer and internet facilities which will enable them to participate fully in the course.