



The
University
Of
Sheffield.

Electronic &
Electrical
Engineering.

EEE126 PRACTICAL SKILLS

Credits: 10

Course Description including Aims

Through the use of practical work, including individual and group projects, this course aims

1. to provide experience in the use of instruments for the analysis of Electronic and Electrical systems, including an appreciation of the accuracy and applicability of these instruments; develop skills in the carrying out of experimental work, making an intelligent choice of data measured, understanding of measurement accuracy, and the ability to critically evaluate the data;
2. to provide opportunities to apply basic electronic concepts to the design of circuits and other systems;
3. to develop skills in reporting technical results in a variety of formats, including graphical and other presentation of experimental data, technical reports and oral presentations;
4. to develop personal organisational and project management skills;
5. to engender and encourage an enthusiasm for the subject by introducing practical applications of scientific and engineering concepts.

Outline Syllabus

(a) Laboratory Work: Workstation Familiarisation Exercises I and II; Computer Aided Design Exercise; Individual Project; Group Project.

(c) Professional Skills: Report Writing Skills; Oral Presentation Skills, Presentation of Data; Use of the Library; Good Experimental Practice, Principles of Error Analysis.

Time Allocation

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|----------------------------|--|
| (a) Laboratory work: | 50 hours of practical work plus 30 hours of report writing |
| (b) Small Group Tutorials: | 10 hours of work related to tutorial activities. |
| (c) Professional skills: | 10 hours of lectures. |

Recommended Previous Courses

Entry Qualifications

Assessment

Continuous assessment by a variety of short reports, full technical reports and oral reports, and attendance in certain laboratories and at personal tutorials.

Recommended Books

Taylor J.R. *An Introduction to Error Analysis*

OUP

Barrass *Scientists Must Write*

Chapman and Hall

Objectives

By the end of this module successful students will be able to:

1. carry out experiments to a prescribed set of instructions.
2. make appropriate use of equipment available and make sensible choices in the measurements made
3. critically analyse results and estimate measurement uncertainties.
4. report their results in a variety of forms, both oral and written, in a concise and clear manner.
5. work effectively in a group to produce a design under identified constraints.
6. plan their study time effectively,

Detailed Syllabus

Laboratory Classes

1. *Workstation Familiarisation Exercises 1 and 2* : These exercises are designed to give students familiarity with the use of basic electronic equipment, particularly signal generators, multimeters and oscilloscopes.
2. *CAD* : Students use CAD tools to design a ladder network oscillator. They then build the circuit and compare its characteristics with those predicted.
3. *Group Project (First Year Great Egg Race)* : Students work in small teams to produce a simple electro-mechanical system. The objective is to give students experience of working in a team to achieve a working system in limited time.
4. *Constructional Project* : Students construct an electronic system. This gives experience of construction, testing and fault finding.

Professional Skills

5. Presentation of technical information in a variety of styles, both oral and written. Information gathering through the library and computer based searches. Good practice in the laboratory principles of error analysis.

