

School of Engineering

Module Guide

Module title: Engineering Principles

ENG_4_402

Level: 4

Module Leader: Steve Faulkner Email: steve.faulkner@lsbu.ac.uk Room Number: FW-305

Lectures & tutorials

Teaching Team: Steve Faulkner Email: steve.faulkner@lsbu.ac.uk Room Number: FW-305

Tutorials

Teaching Team: Paul Battersby Email: batterpa@lsbu.ac.uk Room Number: E-252A

Teaching Team: Saham Sherhani Email: sherhas2@lsbu.ac.uk Room Number: T-809 Teaching Team: Claire Benson Email: bensoncb@lsbu.ac.uk Room Number: E-252A

Lab Demonstrators/HPLs Name(s):

Laboratory Demonstrator Aseel Al-Qutbi Email <u>alqutba2@lsbu.ac.uk</u> Laboratory Demonstrator Mahiuddin Alamgir Email <u>alamgim3@lsbu.ac.uk</u> Laboratory Demonstrator Zahra Echresh Zadeh Email <u>echresz2@lsbu.ac.uk</u> Laboratory Demonstrator Kwame Sarzodie Email <u>sarkodik@lsbu.ac.uk</u>

Assessment of the module

The module is assessed by closed book examination 60% and coursework 40%.

Examination

The examination will be held in January 2020 Week 25 or 26, starting 13th January or 20th January 2020

Coursework

Component	Hand out date	Hand in date	Feedback date
Block A Phase	Week 15		Summative
Test20%	Semester 1,		feedback within 15
	starting 4 th		days
	November		
	2019		
Block B Phase	Week 24		Summative
Test20%	Semester 1,		feedback within 15
	starting 6 th		days
	January 2020		
Laboratory		Week 20	Formative feedback
report 1		Semester 1, to	within 15 days
		be handed in	
		by Friday (13 th	
		December	
		2019)	
Laboratory		Week 20	Formative feedback
report 2		Semester 1, to	within 15 days
		be handed in	
		by Friday (13 th	
		December	
		2019)	
Total	40%	,	

Please ensure that you submit your two laboratory reports (one from E-123 and one from E-127) by the 13th December 2019 to T-313 (Tower Block). These should be submitted FAO the Laboratory Demonstrator that ran your experiment.

What must I do to pass the module?

You must have a mark of 40% overall and at least 30% in each of the assessed components.

Coursework component (40% of module marks):

The coursework element will be in four parts. Two in class tests for Block A & B and also two laboratory reports.

Examination component (60% of module marks):

Preparation for the exam and mini tests is vital. You must know the room location, be there in good time and come with all the right materials – pens, pencils, ruler, eraser and a reliable calculator with scientific functions that you know how to use.

FEEDBACK GUIDELINES

Feedback will normally be given to students within 15 working days after the final submission of an assignment or as advised by their module leader.

General feedback, applying to all students, will also be placed on the module VLE site within 15 working days.

EXTERNAL EXAMINER

Details of the external examiner appointed for this module can be obtained from the course director.

What skills you will develop in this module

Knowledge and Understanding

On successful completion of this module, students will be able to understand the fundamental principles of:

- Thermal physics including: phase transitions and gas laws; different modes of heat transfer
- Basic concepts of optics, electricity and electromagnetism

Intellectual Skills

On successful completion of this module, students will be able to perform a range of appropriate calculations relevant to:

- Systems of units and their interconversion
- Electric and magnetic fields including electromagnetic induction

Practical Skills

Upon successful completion of this module, the student should be able to:

- Solve a variety of engineering problems analytically
- Be able to analyse problems, including the estimation of errors and confidence limits

Transferable Skills

On successful completion of the module, students will be able to:

- Locate and integrate information using appropriate academic and technical publications
- Manage and schedule their time appropriately

Short description of the module

This module develops the students' understanding of essential scientific principles for the study of engineering to degree level. It is designed to be accessible to students with a wide range of prior science specialisation. The module comprises two blocks of study. These introduce the principles of measurement systems and units, thermal physics, mechanical and electrical principles.

The students will be broken down into 2 lecture streams. There will also be 6 tutorial streams.

The module will be taught through a combination of lectures (2 hours/week) and problem-setting tutorials (2 hours/week). Each student will also do 4 laboratory sessions.

The course material will be supplemented by additional reading and practise problems posted on Moodle and links to useful internet sources. Applications across the various engineering disciplines will be introduced in lectures and developed via problem-solving tutorial exercises.

Evaluation of the module

This course is assessed using Module Evaluation Questionaires (MEQs). There is also the opportunity to provide feedback on the module at the student-staff course board meetings.

Learning resources

Reading List

Core Materials

Blocks A & B

Foundation Science for Engineers, Keith L. Watson, May 1998, 2nd edition, ISBN:033372545X.

Optional Materials

Blocks A & B

Electrical Technology, Edward Hughes, 6th Edition, ISBN 058241372 (Library code 621.3 HUG).

Electromagnetism for Engineers: An Introductory Course, 4th Edition, ISBN 0198562985.

Chemistry in Context, G. C. Hill and J. S. Holman, Nelson, 4th edition, ISBN: 0174481918. (Library code 540 HIL).

Additional Information

Module Title:	Engineering Principles
Module Level:	4
Module Reference Number:	ENG 4 402
Credit Value:	20 CAT points
Student Study Hours:	200
Contact Hours:	73
Private Study Hours:	127
Pre-requisite Learning:	None
Course(s):	MEng (Hons) Electrical and Electronic Engineering BEng (Hons) Electrical and Electronic Engineering PT BEng (Hons) Electrical and Electronic Engineering PT MEng (Hons) Electrical and Power Electronics BEng (Hons) Electrical and Power Electronics MEng (Hons) Electrical and Power Electronics PT BEng (Hons) Electrical and Power Electronics PT BEng (Hons) Electrical and Power Electronics PT MEng (Hons) Electrical and Power Electronics PT MEng (Hons) Telecommunications Engineering BEng (Hons) Telecommunications Engineering PT BEng (Hons) Telecommunications Engineering PT MEng (Hons) Telecommunications Engineering PT MEng (Hons) Computer Systems and Network Engineering BEng (Hons) Computer Design 16/17 MEng Computer Engineering 16/17 MEng Computer Engineering 16/17 BEng Computer Engineering 16/17 MEng (Hons) Petroleum Engineering BEng (Hons) Petroleum Engineering BEng (Hons) Chemical & Process Engineering from 17/18 BEng (Hons) Chemical & Process Engineering BEng (Hons) Chemical Engineering
Year and Semester	Year 4, Semester 1
Module Coordinator:	Steve Faulkner
MC Contact Details (Tel, Email, Room)	020 7815 7134, steve.faulkner@lsbu.ac.uk, FW-305
Teaching Team & Contact Details	Blocks A, B Lectures & Tutorials Steve Faulkner, 020 7815 7134, <u>steve.faulkner@lsbu.ac.uk</u> , FW-305 Tutorials Paul Battersby, 020 7815 7906, <u>batterpa@lsbu.ac.uk</u> , E-252A Saham Sherhani, 020 7815 8989, <u>sherhas2@lsbu.ac.uk</u> , T-809 Claire Benson, 020 7185 7921, <u>bensoncb@lsbu.ac.uk</u> , E-252A Laboratories Laboratory Demonstrator Aseel Al-Qutbi Email <u>alqutba2@lsbu.ac.uk</u> Laboratory Demonstrator Mahiuddin Alamgir Email <u>alamgim3@lsbu.ac.uk</u> Laboratory Demonstrator Zahra Echresh Zadeh Email <u>echresz2@lsbu.ac.uk</u> Laboratory Demonstrator Kwame Sarzodie Email <u>sarkodik@lsbu.ac.uk</u>
Subject Area:	School of Engineering
Summary of Assessment Method:	Examination including tests 60%; coursework 40%
External Examiner appointed for module:	Dr Goran Vladisavljevic, Loughborough University

AIMS OF THE MODULE

This module develops the understanding of essential scientific principles for the study of engineering to degree level. It is designed to be accessible to students with a wide range of prior science specialisation.

INTRODUCTION TO STUDYING THE MODULE

Overview of the Main Content

The content of Engineering Principles is indicated in Table 1.

 Table 1: Indicative content of Engineering Principles module

Part A	 Units and conversions; dimensional analysis Temperature and pressure scales Basic structure and states of matter P-T-H relationships, phase transitions P-V-T relationships (gas laws); density; buoyancy Heat transfer: conduction, convection, radiation Basic optics
Part B	 Linear and angular motion Forces, acceleration, work and energy, friction Torque, bending moments; simple machines Simple harmonic motion The Electric Field The Magnetic Field Electromagnetic Induction Current and Resistance

The list of laboratory experiments is given in Table 2.

Table 2: Indicative list of laboratory experiments, Engineering Principles 1

Part A	Thermodynamic properties using Armfield TH3 apparatusThermal conductivity of a poor conductor using Lee's apparatus
Part B	 Tension – Denison test Friction on an inclined plane Simple Harmonic Motion Energy experiment on a plane

The programme of teaching, learning and assessment

Six two hour lectures covering the content of Block A followed by 6 lectures covering Block B make up Semester 1.

Overview of Types of Classes

Lectures (2 hours/week) and tutorials (2 hours/week). Most tutorials will be for work on problems and development of lecture topics.

Class registration

Students are required to use their student ID card to register their attendance for all taught sessions, such as lectures and classes.

The description video for students can be found in the following link: http://www.lsbu.ac.uk/sdu/5min/samstud/

Importance of Student Self-Managed Learning Time

Moodle is an essential tool for your studies. We do not give printed handouts of lectures and tutorials, but we publish them on the Moodle site. So long as you have attended the lecture, Moodle will help to supplement what was delivered. **Do however try to not miss the lectures – you will not grasp the material unless you attend!** You should automatically be registered to access the Moodle site. If you cannot access the module site, contact your course administrator in T-318 and ask to be registered on Engineering Principles. This module is all about getting practise on engineering problems. Sit at a desk in a quiet well-lit room and work through tutorial problems. Don't just read and think! Write, calculate!

My LSBU

Find your timetable on 'My LSBU' via the students' portal <u>https://my.lsbu.ac.uk/.</u> Note that the timetable changes frequently and you should check regularly. Most changes are to the room, although there may be have to be changes to the time or day. If you arrive and cannot find the room for your class, ask at the faculty office T-313.

Employability

Employers require graduates with theoretical engineering knowledge to underpin their ability to analyse and solve engineering problems. This module provides these skills as well as the ability to think critically and quantitatively and use technical written English.