

COURSE OUTLINE FOR STUDENTS AT NTU

Academic Year	2019	Semester	1
Course Coordinator	Associate Professor Sridhar Idapalapati		
Course Code	FE1073		
Course Title	An Introduction to Engineering and Practices		
Pre-requisites	nil		
No of AUs	1		
Contact Hours	Seminars: 9 hours; Labs: 18 hours		
Proposal Date	February 2019		

Course Aims

FE1073 An Introduction to Engineering and Practices aims to:

1. To reinforce students' understanding of physics by experiments;
2. To equip students with basic experimental skills related to physics; and
3. To prepare students with basic knowledge of engineering and practices.
4. To appreciate the contributions of engineers' to societies technological development and well being

Intended Learning Outcomes (ILO)

Upon the successful completion of this course, you would be expected to:

- 1) Conduct instrumented experiments to verify theories related to mechanics, magnetism and electricity in physics
- 2) Document and report the experimental results in a professional manner.

Course Content

	Topic	Hours
1.	Lab C1: Resultants and equilibrium of forces Experiment on the concepts of vector forces and equilibrium of particle/rigid body.	3
2.	Lab C2: Deformation of elastic body Experiment on the stress, strain, elastic moduli and their relationships.	3
3.	Lab M1: Work and energy In this experiment, the concept of work as a process of transferring energy from one system to another will be investigated. It will re-inforce understanding of the work and energy principle.	3
4.	Lab M2: Conservation of momentum By experimenting with bodies in collision, students will investigate the concept of linear momentum and the principle of conservation of momentum.	3
5.	Lab E1: Electric field	3

	In this experiment, the relationship between the equal potential surfaces and electric field lines in the region around several different electrode configurations will be investigated.	
6.	Lab E2: Magnetic field In this experiment, the relationship between current and magnetic field for both steady state and time-varying conditions are investigated.	3
7.	Seminar C1: Introduction to Civil and Environmental Engineering What civil and environmental engineers do and contribute to the society; big civil engineering projects.	3
8.	Seminar M1: The Exciting World of Mechanical and Aerospace Engineering This seminar will talk about mechanical and aerospace engineering in the 21st century. Modern applications and state-of-the-art technology will be discussed.	3
9.	Seminar E1: Introduction to Electrical and Electronic Engineering What EEE engineers do and contribute to the society, including electronic revolution of 1960s and how that has changed the lives of people.	3

Assessment (includes both continuous and summative assessment)

Component	Course LO Tested	Related Programme LO or Graduate Attributes	Weighting	Team/Individual	Assessment rubrics
1. Log-Sheets: (a) Continuous assessment (CA - 50%) (b) Written assessment (50%)	1, 2	a, b, d, j	84%	individual	
2. Technical Report: (a) Continuous assessment (CA - 50%) (b) Report writing (50%)	1, 2	a, b, d, j	16%	individual	
Total			100%		

Appendix 4 lists Student Learning Outcomes as set by the Engineering Accreditation Board.

Formative feedback

The appreciation seminars are kept to be interactive with intermittent question and answer session.

The formal feedback from the laboratory experiments will consist of: (1) discussion between the instructor and you during each experiment, in the form of simple questions

and responses, and (2) qualitative grades given to your experimental log-sheets and formal reports.

Learning and Teaching approach

Approach	How does this approach support students in achieving the learning outcomes?
Seminars	The seminars are delivered using power point presentations and videos or simulations highlighting the evolution of science and technology in the broad fields of civil, environmental, mechanical, aerospace, electrical and electronics engineering highlighting key achievements and challenges for the futures endeavours of the society.
Briefing by laboratory instructor	A briefing at the beginning of an experimental session will highlight: (1) the basic theory, analysis and approach of the experiment, (2) experimental procedures, including apparatus set-up, measurements, documentation and safety aspects, (3) assumptions, errors, uncertainties and critical observations, and (4) academic integrity in reporting the experimental results.
Oral assessment	The instructor will pose questions and invite students to answer, with an aim to: (1) enable each you to discover your own depth of knowledge, (2) encourage critical/creative thinking, and (3) motivate students' interest in the experiments.

Reading and References

Nil

Course Policies and Student Responsibilities

As a student of the course, you are required to abide by both the University Code of Conduct and the Student Code of Conduct. The Codes provide information on the responsibilities of all NTU students, as well as examples of misconduct and details about how students can report suspected misconduct. The university also has the Student Mental Health Policy. The Policy states the University's commitment to providing a supportive environment for the holistic development of students, including the improvement of your mental health and wellbeing. These policies and codes concerning students can be found in the following link.

<http://www.ntu.edu.sg/SAO/Pages/Policies-concerning-students.aspx>

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing

what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, and collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Course Instructors

Instructor	Office Location	Phone	Email
A/P Sridhar Idapalapati (MAE)	N3-02b-37	6790 4784	MSRIDHAR@ntu.edu.sg
A/P Ng Teng Yong (MAE)	N3-02c-70	6790 4797	MTYNg@ntu.edu.sg
A/P Shu Dong Wei (MAE)	N3.2-02-19	6790 4440	MDSHU@ntu.edu.sg
SRF Gopinath Menon (CEE)	N1-01c-106	6790 6104	CGOPINATH@ntu.edu.sg
Ast/P Qian Shunzhi (CEE)	N1-01c-79	6790 4916	SZQian@ntu.edu.sg
A/P Tan Soon Keat (CEE)	N1-01b-50	6790 5321	CTANSK@ntu.edu.sg
Prof. Zhang Yue Ping (EEE)	S2-B2c-90	6790 4945	EYPZhang@ntu.edu.sg
A/P Gooi Hoay Beng (EEE)	S1-B1c-82	67904941	EHBGOOI@ntu.edu.sg
A/P Guan Yong Liang (EEE)	S1-B1c-100	6790 5875	EYLGuan@ntu.edu.sg

Planned Weekly Schedule

Week	Topic	Course ILO	Readings/ Activities
1	Seminar highlighting the key developments Civil and Environmental Engineering	Aim 4	Three seminars per week
2	Seminar on the appreciation of Electrical and Electronic Engineering	Aim 4	Three seminars per week
3	Seminar on the appreciation of Mechanical and Aerospace Engineering	Aim 4	Three seminars per week
4	Laboratory Experiment 1	ILO 1, 2	Experiment handout
5	Laboratory Experiment 2	ILO 1, 2	Experiment handout
6	Laboratory Experiment 3	ILO 1, 2	Experiment handout
7	Laboratory Experiment 4	ILO 1, 2	Experiment handout
RECESS WEEK			
8	Laboratory Experiment 5	ILO 1, 2	Experiment handout
9	Laboratory Experiment 6	ILO 1, 2	Experiment handout

Note: During weeks 4 to 9, students will be rotated in a group of 5 to 6 to carry out the laboratory experiments C1, C2, E1, E2, M1 and M2