Course Specifications

Program(s) on which this course is given:	Electronics & Electrical Communications Engineering
Major or Minor element of programs:	Major
Department offering the program:	Electronics & Electrical Communications Engineering
Department offering the course:	Mechanical Power Engineering
Academic year / Level:	Second
Date of original/modified specification approval:	2003/
Semester of course offering:	First

A- Basic Information

1.a. Title:	Mechanical Engineering			**1.b. Code:**	MEP 217			
2. Units/Credit hours per week:	2.a. Lectures	4	2.b. Tutorial	2	2.c. Practical	0	2.d. Total	6

B- Professional Information

1. Overall Aims of the Course:	Increase the student's knowledge in some basic sciences of mechanical engineering such as Fluid Mechanics (part A) and Heat Transfer (part B).
2. Intended Learning Outcomes of Course (ILOs):	**a) Knowledge and Understanding (1.1)**
	1. **<u>Part A:</u>** Introduction and Fundamentals of Fluids – Statics of Fluids – Characterization of Fluid Flow – Integral Equations – Basic Equations: Conservation of Mass, Momentum, and Energy – Bernoulli's Equation – Applications on Momentum and Bernoulli's Equations. 2. **<u>Part B:</u>** General Equation of Conduction – One-Dimensional Steady State Conduction – Steady State Conduction With Internal Heat Generation – Steady Conduction With Variable Thermal Conductivity – Fins and Extended Surfaces–Unsteady Conduction – Fundamentals of Convection – Dimensionless Groups – Natural Convection Correlations – Forced Convection.
	b) Intellectual Skills (3.1)
	1. Select and apply appropriate mathematical and numerical methods in modelling and analysis of engineering problems. 2. Apply various governing integral and differential equations in various coordinate systems (Cartesian, cylindrical and spherical forms) suitable for the flow examined.
	c) Professional and Practical Skills (2.1)
	1. Identify the problems. 2. Manage work entitled 3. Formulate and analyse fluid flow practical problem
	d) General and Transferable Skills (4.7)
	1. Perform engineering calculations 2. Transfer knowledge 3. Work in group. 4. Communicate in written and oral forms 5. Draw layouts and working drawings.

3. Contents			
Topic	**Total hours**	**Lectures**	**Tutorial/ Practical**
Part A: Introduction & Fundamentals of Fluids – Statics of Fluids–Characterization of Fluid Flow–Integral Equations–Basic Equations: Conservation of Mass, Momentum, and Energy –Bernoulli's Equation–Application on Momentum and Bernoulli's Equations.	45	30	15
Part B: General Equation of Conduction–One-Dimensional Steady State Conduction – Steady State Conduction With Internal Heat Generation – Steady Conduction with Variable Thermal Conductivity–Fins and Extended Surfaces–Unsteady Conduction–Fundamentals of Convection–Dimensionless Groups–Natural Convection Correlations–Forced Convection.	45	30	15

4. Teaching and Learning Methods			
	Lectures (Y)	Practical Training/ Laboratory (N)	Seminar/Workshop (N)
	Class Activity (Y)	Case Study (Y)	Projects (N)
	E-learning (N)	Assignments /Homework (N)	Other:

5. Student Assessment Methods	
5.a. Method	**To assess (with reference to the ILOs)**
• Quizzes	a1, a2, b1, b2, c1, c2, c3, d1
• Mid-Term exams	a1, a2, b1, b2, c1, c2, c3, d1
• Case Studies	a1, a2, b1, b2, c1, c2, c3, d1 – d5
• Final Exam	a1, a2, b1, b2, c1, c2, c3, d1
5.b. Assessment Schedule	**Week**
• Quizzes	
• Mid-Term exam	8
• Case Studies	
• Final Exam	15
5.c. Weighting of Assessments	
• Quizzes and case studies	15%
• Mid-Term exams	20%
• Final Exam	65%
• Total	100%

6. List of References

6.a. Course Notes: Course notes developed by the course coordinator and his group

6.b. Essential Books (Text Books): N/A.

6.c. Recommended Books:

1. Introduction to Fluid Mechanics, R. W. Fox and A. T. Mc Donald, John Wiley & Sons. 1994.
2. Fundamentals of fluid mechanics, B. R. Munson, D. F. Young and T. H. Okiishi, John Wiley & Sons. 1994.
3. Fluid Mechanics, Frank M. White, Mc Graw Hill, 1986.
4. Mechanics of Fluids, M.C. Potter and D. C. Wiggert, Prentice Hall, 1991.

6.d. Periodicals, Web Sites, … etc: N/A.

7. Facilities Required for Teaching and Learning

• Lecture room for 200 students, accommodated with visual aids and data show.	
Course Coordinator:	Prof. Dr. Mohamed Abolfadl and Dr. Abdel Monem Ateyya
Head of Department:	Prof. Dr. Mohamed Aly Hassan
Date:	