Arab Academy for Science, Technology & Maritime Transport
College of Engineering & Technology
Department of Basic and Applied Science

University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form no. (12)
Course Specification

1- Course Data

Course Code: **IM542**	Course Title: **Reverse Engineering**		Academic Year/Level: **5th** year / **9th** semester
Specialization: **Mechanical**	No. of Instructional Units	Lecture	Practical
	3 credits	**2 hrs.**	**2 hrs.**

2- Course Aim

The course provides an introduction to product development with reverse engineering concept, product development tools, definition of customer needs, product architectures. It also covers product metrics, design for manufactures and assembly, design for environment, and several case studies.

3- Intended Learning Outcomes

n- Knowledge and Understanding	**Through knowledge and understanding, students will be able to:** K4) Principles of design including elements design, process and/or a system related to specific disciplines. K7) Business and management principles relevant to engineering.
o- Intellectual Skills	**Through intellectual skills, students will be able to:** I3) Think in a creative and innovative way in problem solving and design I5) Assess and evaluate the characteristics and performance of components, systems and processes
p- Professional Skills	**Through professional and practical skills, students will be able to:** P3) Create and/or re-design a process, component or system, and carry out specialized engineering designs P6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
q- General Skills	**Through general and transferable skills, students will be able to:** G7) Search for information and engage in life-long self learning discipline.

4- Course Content

Week Number 1:	Introduction to product development phases.
Week Number 2:	Product development process tools.
Week Number 3:	Scoping product development.
Week Number 4:	Understanding customer needs.
Week Number 5:	Establishing product functions.
Week Number 6:	Product teardown and experimentation.
Week Number 7:	7th week Exam.
Week Number 8:	Benchmarking and establishing engineering specifications.
Week Number 9:	Product architecture.
Week Number 10:	Generating concepts.
Week Number 11:	Concept selection.
Week Number 12:	12th week Exam.
Week Number 13:	Design for manufacturing and assembly.
Week Number 14:	Design for the environment.
Week Number 15:	Model solutions and prototyping.
Week Number 16:	Final Exam.

5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets

Academic Support:

- The general academic advisor appoints an academic supervisor for handicapped students.
- Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes. 2-Class Activities (Reports, Discussions, ------) to assess The Intellectual and general Skills.	
b- Schedule:	Assessment 1 Assessment 2 Assessment 3 Assessment 4	7th Week Assessment 12th Week Assessment Continuous Assessments 16th Week Final Written Exam
c- Weighing of Assessment	7th Week Evaluation 12th Week Evaluation Final-term Examination Oral Examination Practical Examination Semester Work Total	30 % 20 % 40 % 00 % 00 % 10 % 100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	Kevin Otto and Kristin Wood, "Product Design", Prentice Hall, latest edition.
c- Recommended Books	Karl Ulrich and Steven Eppinger, "Product Design and Development", McGraw-Hill, latest edition.
d- Periodicals, Web Sites, etc.	N/A

Course coordinator: **Program Manager:**