



Course Specification

— (Bachelor)

Course Title: CAPSTONE DESIGN PROJECT

Course Code: INE-5300-3

Program: Bachelor in Industrial Engineering

Department: Industrial Engineering

College: College of Engineering

Institution: King Khalid University

Version: *Course Specification Version Number*

Last Revision Date: *Pick Revision Date.*



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A. General information about the course:

1. Course Identification

1. Credit hours: (.....3...)

2. Course type

A. University College Department Track Others
 B. Required Elective

3. Level/year at which this course is offered: ((Eighth Level/ Fourth Year

4. Course general Description:

This is will provide technical writing skills, and team-work opportunity, it is a capstone design work involving a practical, open ended, real life unstructured problem having a set of alternative solutions; emphasis on synthesis of knowledge and skills to assimilate and demonstrate a professional attitude and ethics in problem solving with assessment of environmental, cultural and social impacts; final output in the form of written report based on specified standard format, followed by a multimedia presentation of the work undertaken in the project

5. Pre-requirements for this course (if any):

NIL

6. Co-requisites for this course (if any):

NIL

7. Course Main Objective(s):

- CLO1. Define design objectives, design constraints
- CLO2. Compare and maintain appropriate design documentation
- CLO3. Plan a design project considering impact of engineering solution
- CLO4. Create, evaluate and select work as a design team
- CLO5. Establish proficiency in Design modelling techniques
- CLO6. Recognize issues of product safety, risk, and reliability

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	✓	80-%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> ● Traditional classroom 	✓	20%



No	Mode of Instruction	Contact Hours	Percentage
	● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	NIL
2.	Laboratory/Studio	NIL
3.	Field	NIL
4.	Tutorial	NIL
5.	Others (specify) DESIGN PROJECT	30
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define design objectives, design constraints, measures of design viability, and the evaluation criteria of the final project, and reformulate the problem based on collected data.	K1, K2	lectures	Designated questions from the mid-term and final exam, quizzes
1.2	Integrate previous knowledge from mathematics, basic sciences, engineering fundamentals and	K3, K4	Traditional teaching method using board, zoom	Home works, quizzes



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	discipline related courses to address the problem.			
...	Collect and identify related data such as technical information regulations, standards and operational experiences from credible literature resources.	K4	Traditional teaching method using board	Presentations
2.0	Skills			
2.1	Generate possible solutions; compare alternatives and select one alternative based on evaluation criteria and feasibility analysis.	S1	Traditional teaching method using board	Surprise tests to know the level of student for further proactive solution like special hours for the weak students
2.2	Plan an effective design strategy and a project work plan, using standard project planning techniques, to ensure project completion on time and within budget.	S2	Traditional teaching method using board	Presentations
	Implement a planned design strategy for an experimental design project, if applicable.	S3,S4	Traditional teaching method using board	Surprise tests, quizzes
	Discuss all applicable realistic constraints such as economic, environmental,			



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	social, political, ethical, health and safety, manufacturability, and sustainability.			
	Analyze a project statement, brief, or proposal to identify the real problem and the most relevant needs and operational constraints.	S5,S6	Traditional teaching method using board	Surprise tests, quizzes
...				
3.0	Values, autonomy, and responsibility			
3.1	Communicate design details and express thoughts clearly and concisely, both orally and in writing, using necessary supporting material, to achieve desired enhancing and impact.	V1	Traditional teaching method using board	Surprise tests, quizzes
3.2	Demonstrate ability to achieve project objectives while acting as an effective member of a multidisciplinary team.	V3,V4	Traditional teaching method using board	Presentations
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Design methodology, synthesis, Creativity and conceptualization	3
2.	Project management techniques	6



3.	Problem Solving Heuristic	6
---	Teamwork Skills	6
	Communication skills, written and Oral.	6
	Use of standards and design codes	6
	Software tutorials (e.g. MS Info Path, Mind Manager, MS Project, Arena etc.).	6
	Cost analysis.	6
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Semester work	6	60
2.	Final Presentation	13	40
3.			
4.			
...			100

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ul style="list-style-type: none"> Strategies for Creative Problem Solving, Fogler, H. S., and LeBlanc, S.E., 3rd Edition, Prentice Hall, 2008, 978-0133091663.
Supportive References	<ul style="list-style-type: none"> Automation, Production Systems, and Computer Integrated Manufacturing, Mikell Groover, 4E, Prentice Hall, 2015.
Electronic Materials	Course page on Blackboard
Other Learning Materials	Lecture handouts

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Facilities are available only real time analysis to be done
Technology equipment (projector, smart board, software)	Every student requires access to a personal computer and the Internet. On-site University access is provided through the



Items	Resources
	University Central Library.
Other equipment (depending on the nature of the specialty)	Present Planned Resources takes care of the subject's needs.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Course Evaluation Survey (CES)
Effectiveness of students assessment	Students	Blackboard feedback
Quality of learning resources	Students	Course Evaluation Survey (CES)
The extent to which CLOs have been achieved	Course Evaluation Committee (CEC)	In-Situ Evaluation
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Course Evaluation Committee (CEC)
REFERENCE NO.	
DATE	

