Sana'a University
Faculty of Engineering
Department Civil Engineering

Master of Science in Engineering Project Management

Program Specifications

June - 2021

Faculty of Engineering, Sana'a University

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Sana'a University
Faculty of Engineering
Department: Civil Engineering
Title of the Program:
Master of Science in Engineering Project Management

Program Specification

1. Program Introduction/Description

The Engineering Project Management is a mixed program offering courses and research for a duration of up to three years. The program exposes students to the project management industry standards and prepares them to successfully plan, manage, and execute engineering projects. It also provides students with research insights and the ability to perform research in the field of engineering project management.

2. Program Identification and General Information

Program Title	Master of Science in Engineering Project Management
Awarding Institution	Sana'a University
Department	Department of Civil Engineering
Other Departments with major Teaching Contributions	All Engineering Departments
Language of study	English Language.
Date of Specification Preparation/Revision	May 2021
Mode of Study	Full time
Study System	Courses & Thesis
Main Location of Study	Faculty of Engineering/Sana'a University
Mode of Delivery	Full-time
Study Duration	Minimum: 2 Academic years (Two terms each, full-time) Maximum: 3 Academic years (two terms each - full time)
Award(s) or Final Award	Master of Science (MSc.) in Engineering Project Management
Qualification required to join the program:	BSc. in any Engineering and/or related fields
Minimum grade requirements to enroll in the program	Good 65%
Other admission requirements	Detailed below
Name of the program coordinator	Dr Tarek Barakat
Approval date:	

3. Program Curriculum Committee:

Dr Omar Al-Sakaf	**Dr Wael alAghbari**
Dr Tarek Barakat	**Dr. Mohammad A. Algorafi**

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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4. Vision, Mission & Aims of the University

Vision of the University

Sana'a University aspires to achieve a national leading role in teaching, learning, scientific research and community service; and to be among the best regional universities and the foremost house of expertise and think tank in Yemen.

Mission of the University

To contribute to the sustainable development efforts by providing an accredited higher education environment and excellent research services within a fruitful national partnership based on transparency, professionalism and creativity.

Aims of the University

The University seeks to achieve the following objectives:

- To provide specialized and in-depth academic opportunities for students in different fields of knowledge to meet the country's needs of specialties, technicians and experts, with special focus on the following:

- To boost the level and quality of preparation and qualification tasks.
- To create a general culture aiming at developing the elements of sound Islamic personality and the proper cognitive and scientific training.
- To stabilize the true Islamic vision emanating from the broad horizons of Islamic knowledge and its perception of the universe, man and life.
- To develop innovative and critical scientific thinking skills.
- To provide students with the required knowledge and scientific and applied skills for solving problems effectively and efficiently.

5. Vision, Mission & Aims of the Faculty

Vision of the Faculty

To excel in engineering education & scientific research with distinction at the local and regional levels.

Mission of the Faculty

To provide excellent and accredited engineering education to meet the development needs and match the labor market requirements locally and regionally.

Aims of the Faculty

1. To offer study programs in various fields of knowledge and equip students with required knowledge and scientific and know-how skills to utilize them in resolving problems effectively and efficiently.
2. To develop positive trends towards engineering science and its accelerating developments and enable students to use the techniques and methods of conducting scientific research in

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engineering fields.
3. To develop skills of scientific, innovative and critical thinking as well as the concept of continuous self-education.
4. To strengthen scientific ties with national and international colleges, scientific bodies, and research & development centers.
5. To provide technical and specialized studies and consultations to various state bodies and institutions, both public and semi-public, and utilize them in resolving the environment and society issues to promote sustainable development.
6. To develop a spirit of co-operation, group work, effective leadership, sense of responsibility, and ethical commitment.

6. Mission & Aims of the Department

Mission of the Department
To provide students with good quality Civil Engineering education that prepares them to be qualified and committed professionals who could pursue graduate studies and research and play a leading role in the sustainable development of the country and its integration into the regional economy.
Aims of the Department
1. provide a high-quality educational experience through an appropriate depth over the full range of core engineering subject areas for undergraduate and postgraduate programs,
2. applying the quality assurance standards and targeting the academic accreditation levels (local, regional and international levels).
3. Serving the community and labor market needs through the consultancy, research, laboratory tests and training services.

7. Mission & Aims of the Program

Mission of the Program
To graduate distinguished Master holders in the field of engineering project management through a strong academic program, qualified staff, and suitable research infrastructure that meet local development requirements and regional labor market needs.
Aims of the Program
1. To develop students who understand project management methods and tools, and are able to employ them in the planning and execution of projects.
2. To bridge the gap between the academic and industrial and technological environments.
3. To provide graduates who are able to document and communicate, using oral and written presentations, project plans and results.
4. To provide graduates with up-to-date advanced knowledge and skills needed to plan, manage and execute projects successfully.

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5.	To graduate researchers in engineering project management who can pursue further studies and research contributing to the scientific research community.
6.	To provide graduates able to effectively contribute to the engineering project management profession by applying ethical practices and communication skills, sharing innovative and clear ideas and pursuing further education through lifelong learning.

8. Program Standards & Benchmarks

Program Standards

- Rules and Regulations of the Ministry of Higher Education and Scientific Research, Yemen.
- Accreditation Board for Engineering and Technology (ABET)

Program Benchmarks

Project management Institute (PMI)		

9. Summary of Similar Programs (Benchmarks) for Engineering Project Management Program

	The Similar Programs (Benchmarks)						Current Program
	1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program	
Program Title	MSc Engineering Project Management	MSc. Project Management	Master of Engineering Management	MSc. Project Management	MSc Engineering Management	Master of Engineering Project Management	MSc. in Engineering Project management
Faculty	Faculty of Science and Technology	Faculty of Engineering	Faculty of Engineering	-------	Faculty of Engineering	-----	Faculty of Engineering
University	Bournemouth University	Universiti Teknologi Malaysia (UTM)	American University of Beirut (AUB)	University of Wisconsin	University of Sharjah	Vaasan ammattikorkeakoulu, (VAMK) University of Applied Sciences	Sana'a University
Country	UK	Malaysia	Lebanon	USA	UAE	Finland	Yemen

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9. Summary of Similar Programs (Benchmarks) for Engineering Project Management Program

	The Similar Programs (Benchmarks)						Current Program
	1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program	
Type of Program	Courses + individual project	Mixed Mode/Coursework	Mixed Mode/Coursework	Online	Mixed Mode/Coursework	Mixed Mode/Course work	Courses and Research
Study methods in the program:	Full and part-time regular	Full and part-time regular	Full time regular	Full and part-time online	Full time	Full time and part time regular and online	Full-time
Number of semesters	Full time 12-24 months Part-time 24-36 months	Full time 3 semesters Part-time 4-8 semesters	Full time 4 semesters	Full time 4 semesters Part time 5-10	Full and part time 4 semesters	Full time and part time 4 semesters	4
Total Credit Hours (without Thesis)	180 (90 ECTS) equivalents to 27 credit hours Including equivalent 9 credits individual project	36credit hours	30 credits	36 credit hours	33 credit hours	60 credit hours	30
No. of Compulsory Courses	6	6	4	5	4	6	8
Credit Hours for	120 (equival	18 credit hours	12 credit hours	15 credit hours	12 credit hours	30 credit hours	30

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	The Similar Programs (Benchmarks)						Current Program
	1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program	
Compulsory Courses	ent 18 credit hours)						
No. of Elective Courses	None	6	4	5	2	----	0
Credit Hours for Elective Courses	0	18 credit hours	12 hours	15 credit hours	6 credit hours	---	0
Complementary courses to join the program and their number	None	None	None	None	None	None	-
Credit Hours for Thesis	0	10	6	6	15	30	6
Total Credit Hours for courses & Thesis	180 (equivalent 27 credit hours)	46 credit hours	30 credit hours	36 credit hours	33 credit hours	60 credit hours	36
The period for thesis completion	N/A	1-6 semesters (each semester is 14 weeks)	1 year	1 year	1 year	1 year	2 Semesters
The min. period to complete the program	12 months	12 months	2 years	3 semesters	------	1 year	2 Years (Min. years for courses: 1)
The max. period to complete the program	36 months	48 months	-----	5 years	------	2 years	1+2 Years (Max. years for courses 1)

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10. Program Intended Learning Outcomes (PILOs)

A. Knowledge and Understanding

Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:

A1.	Describe the various project management knowledge areas.
A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
A3.	Demonstrate knowledge and understanding of methodology, research planning, and analysis techniques.
A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently

B. Intellectual Skills

Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:

B1.	Identify, analyze, formulate, and solve engineering management problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
B2.	Critically evaluate decision making techniques to aid management judgement;
B3.	Analyze and think critically with respect to the planning of engineering design and project development;
B4.	Formulate hypotheses, design and perform experiments/research scientifically to solve and explain phenomena.

C. Practical and Professional Skills

Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:

C1.	Apply expertly several different techniques used in the management and control of projects.
C2.	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.
C3.	Initiate, plan, execute, and close out a project utilizing project management concepts.
C4.	Develop, conduct, defend and disseminate academic research or a research project in one of the engineering management areas.

D. Key Transferrable Skills

Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:

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D1.	Prepare complete theses and reports, present the ideas clearly and defend them.
D2.	Balance professional and ethical responsibilities including contemporary issues and health, safety, and environmental awareness.
D3.	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.

11. Teaching Strategy to Achieve Program Learning Outcomes

ILOs	Teaching Strategy	Assessment Methods
A1	Lectures, Seminars, Self-Learning., independent study, active learning, computer hands-on sessions.	Field work, projects, survey, Written Exam, Assignments
A2	Lectures, Seminars, Self-Learning., independent study, active learning, computer hands-on sessions.	Field work, projects, survey, Written Exam, Assignments
A3	Lectures, Seminars, Self-Learning., independent study, active learning, computer hands-on sessions.	Field work, projects, survey, Written Exam, Assignments
A4	Lectures, Seminars, Self-Learning., independent study, active learning, computer hands-on sessions.	Field work, projects, survey, Written Exam, Assignments
B1	Project supervision, Self-Learning, simulation exercises, independent study, Analysis and Problem Solving, Lectures, Brain storming, case studies, discussion. Presentations, Presenting research	Field work, projects, survey, Written Exam, Assignments
B2	Project supervision, Self-Learning, simulation exercises, independent study, Analysis and Problem Solving, Lectures, Brain storming, case studies, discussion. Presentations, Presenting research	Field work, projects, survey, Written Exam, Assignments
B3	Project supervision, Self-Learning, simulation exercises, independent study, Analysis and Problem Solving, Lectures, Brain storming, case studies, discussion. Presentations, Presenting research	Field work, projects, survey, Written Exam, Assignments
B4	Project supervision, Self-Learning, simulation exercises, independent study, Analysis and Problem Solving, Lectures, Brain storming, case studies, discussion. Presentations, Presenting research	Field work, projects, survey, Written Exam, Assignments
C1	Project supervision, lectures, independent study, case studies, analysis and problem solving	Field work, reports, written research proposal, thesis and publication.

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ILOs	Teaching Strategy	Assessment Methods
C2	Project supervision, lectures, independent study, case studies, analysis and problem solving	Field work, reports, written research proposal, thesis and publication.
C3	Project supervision, lectures, independent study, case studies, analysis and problem solving	Field work, reports, written research proposal, thesis and publication.
C4	Project supervision, lectures, independent study, case studies, analysis and problem solving	Field work, reports, written research proposal, thesis and publication.
D1	Dissertation and presentation, independent study, presenting reports, brainstorming, presenting research, publish research papers.	Written research proposal, thesis and publication, written exam, individual and team assignments, field work, report, survey, presentation, written report.
D2	Dissertation and presentation, independent study, presenting reports, brainstorming, presenting research, publish research papers.	Written research proposal, thesis and publication, written exam, individual and team assignments, field work, report, survey, presentation, written report.
D3	Dissertation and presentation, independent study, presenting reports, brainstorming, presenting research, publish research papers.	Written research proposal, thesis and publication, written exam, individual and team assignments, field work, report, survey, presentation, written report.

Teaching Strategy	Description of the Main Strategy Used
Lectures.	The weekly interactive lectures are to be conducted according to course plan in a classroom and supported with a variety of teaching formats including: lectures and multimedia presentations, use of whiteboard and solved examples, and class discussions in which concepts, approaches, and case studies are presented, explored, and debated between students.
Independent study	Independent study is an individualized learning experience that allows students to select a topic focus, define problems or questions, gather and analyze information, apply skills, and create a product to show what has been learned.
Self-Learning.	Students are encouraged to undertake independent study to both supplement and consolidate what is being taught.
Active learning	Students are to be involved in teamwork with their peers to discuss and solve case studies. Students are to be involved in ongoing projects to get practical hands-on experience.

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Computer hands-on sessions.	Practical hands-on computer applications using a variety of software that assist as tools for project management (planning and estimating software). Students are to be active in a variety of web-based searches to learn how they can search for information and solutions using the Web.
Simulation exercises	Students are to be exposed to a variety of case studies to simulate projects and outcomes within a certain set of circumstances.
Analysis and Problem Solving.	The study of engineering project management involves applying knowledge and problem-based learning. This allows students to become more active in their learning as they work out what information they need to find out, how to critically analyze the information and how to solve problems. They can work out a problem individually or collaboratively and practice research to come up with a valid solution.
Laboratory works.	N/A
Presentations/ Presenting researches	Students are to present their work to the whole group for discussion, criticism, and suggestions for improvement. Presentation sessions provide an opportunity to address questions, queries, and problems.
Project supervision	The students will be assigned to projects to get practical hands-on experience which they will present their work to the whole group, for discussion, criticism, and suggestions for improvement. Project sessions provide an opportunity to address questions, discuss alternatives and develop solutions to problems.
Brain storming	Brainstorming is an effective technique for generating lists of ideas and creating interest and enthusiasm for new concepts or topics. Brainstorming provides teachers and students with an overview of what students know and/or think about a specific topic. Students can use brainstorming to organize their knowledge and ideas.
Dissertation	Students are encouraged to discuss their thesis plans with their supervisor(s). The supervisor(s) are to provide their students step by step guidance to complete their thesis and defend it. Throughout the student coursework critical thinking and analysis shall be engrained within the classroom environment to assist students during their thesis preparation.
Publish research	Students are to be encouraged to publish their works in conferences and reviewed journals. Professors are to assist the students by encouraging critical thinking and

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	analysis and toning their writing skills.
Seminar	Professors need to set advance work for a group of students and have them present their work to the whole group for discussion, criticism, and suggestions for improvement. Seminar sessions provide an opportunity to address questions, queries, and problems.
Research activities	Research-led activities envisage activities in which students learn about current research in the discipline and are frequently an audience. The emphasis is put on the research content.

Assessment Strategy	Description of the main strategy used.
Written Exam	The mid-term exam is conducted in the 8th week and the final exam is conducted at the end of each course. Both tests are closed or open book, notes and resources. At least two quizzes must be given during the duration of the course.
Oral Discussion	To know the knowledge of the students.
Presentations	For Final Results displaying, to enhance the level of students in different subjects.
Quizzes	The entire assessment of Quizzes activities during the teaching period of each course.
Laboratory Reports	To demonstrate the personal skills, practical expertise, communication skills, report writing skills, and team work expertise they are expected to be learned and gained through their education.
Experimental and field work	For evaluation, to demonstrate the personal skills, practical expertise, communication skills, report writing skills, and team work expertise they are expected to be learned and gained through their education.
Survey	Students will be provided the opportunity to develop, perform and analyze surveys to be evaluated by the professor.
Assignments	The entire assessment of coursework activities during the teaching period of each course (which includes group and individual work, tests and presentations, etc.)
Seminar	The teacher needs to set advance work for a selected number of students, and then have the selected students present their work to the whole group, for discussion, criticism, and suggestions for improvement. Seminar sessions provide an

	opportunity to address questions, queries, and problems.
Written report/research	Students will be required to provide written reports on various topics as well as on field visits to projects/sub-research, these are to be evaluated in terms of content and writing methods.
Written research proposal	The research proposal for students will be required before starting performing of research. This will be evaluated by the supervisor and evaluation committee from the department.
Thesis and publications	Students are required to perform research towards their thesis and publications are required during their research. The publications and thesis will be evaluated in accordance with the faculty standards.

12. Intended Learning Outcomes Mapping:

See Annex 10

13. Program Structure

Program Requirement	No. of Courses	Credit Hours	%
Complementary Courses	See List below.		
Faculty Requirement	1	3	8%
Compulsory Courses	7	27	75%
Elective Courses	0	0	0%
Thesis	-	6	17%
Total		36	100%

Complementary Courses (00 hrs)

No	Course Code	Course Title	L	T	P	Cr. Hrs.
1	N/A					
2						
Total						**00**

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		Compulsory Courses (7 Courses, 21 CH)				
No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Cr. Hrs.**
1	**FR501**	Research Methodology	3			3
2	**CE590**	Advanced Project Management 1 (Integration, Scope, Time, Cost Management)	4			4
3	**CE591**	Advanced Project Management 2 (Quality, Resource, Communications Management)	4			4
4	**CE592**	Advanced Project Management 3 (Risk, Procurement, Stakeholders Management)	4			4
5	**CE593**	Project Monitoring and Controlling	4			4
6	**CE594**	Health, Safety and Environment HSE Management	4			4
7	**CE595**	Soft Skills for the Project Manager	3			3
8	**CE596**	Pre-Project Planning and Feasibility Analysis	4			4
Total			**30**			**30**

		Elective Courses (3 Courses, 9 CH)				
No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Cr. Hrs.**
1	N/A					
2						
Total						**00**

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Thesis
The student must prepare and discuss a Thesis by (6) credit hours. THESIS599 MS Thesis
Thesis and Its Requirements (if any)

1. Registration of the thesis:

(Requirements/conditions and procedures for registration of the thesis as well as controls, responsibilities and procedures of scientific guidance)

- Completion of all required Compulsory & Elective Courses with average grade more than or equal to 75% .
- Completion of all university requirements.
- Field of Research and precise research topic with short Description and suggested time plan.
- First Department Seminar.
- Decision letter (Supervisors) of acceptance of the research topic.
- Thesis work should be done in at least 2-semesters.
- Thesis work should be done in at most 4-semesters.
- Any further requirements and controls based on post-graduate deanship regulations.

2. Scientific Supervision:

(The regulations of the selection of the scientific supervisor and his/her responsibilities, as well as the procedures/ mechanisms of the scientific supervision and follow-up)

- At most 2-supervisors are selected for the supervision of a thesis.
-At least 1-Associate (or Full) Professor is appointed as supervisor either from the department or from another department outside the faculty.

-Any Assistant Professor appointed as supervisor should have at least 4-year experience in the field of research and have published at least one paper.
Candidates may apply for one-year extension (full-time) for completion of the thesis to the Postgraduate Program Administration at the Faculty of Engineering, which will be granted if the candidate provides a valid reason for extension.

The supervisor responsibilities are - :
-Help and assist the candidate/researcher in preparing the research plan.
-Guide the candidate to adhere to certain standards of academic integrity and research ethics, including combating plagiarism.
-Monthly, follow up and meeting with the researcher (at least one meeting per month)- ، Guide the researcher at every step to be done during thesis work،
-Write follow-up (progress report) after each meeting
-Write a follow-up (evaluation report) every semesters.
-The supervisor shall submit copies of these reports to the Postgraduate-Program coordinator, the

Head of the Department and the Head of the Faculty Post-graduate.
-Write the final thesis acceptance report in order to prepare the final department seminar and then initiating the preparation for thesis presentation, defense and approve.

The candidate/student responsibilities are - :
-Student present his/her accomplishment at the end of every semesters;
-plan and actively pursue the research؛
-identify and deal with any research-related problems؛
-comply with administrative requirement؛
-meet ethical guidelines؛
-take responsibility for the final form of the thesis
-A thesis or research portfolio is the outcome of independent research, or creative activity conducted under supervision.
-The length of a 6 credit hours thesis or research portfolio will be appropriate to the discipline and must not exceed 30,000 words, including bibliography, footnotes or endnotes and essential appendices, unless specific permission has been granted by the Department.

3.Thesis Defense/Examination:

(The regulations for selection of the defense/examination committee and the requirements to proceed for thesis defense, the procedures for defense and approval of the thesis, and criteria for evaluation of the thesis)

-A thesis proceeds for defense following completion of:
-At least one research paper is accepted in a journal in the field of research.
-Final acceptance letters provided by the supervisor(s) and the department final seminar committee (at least 3-department members)؛
-The examination committee should consist of - :
-One -Associate (or Full) Professor specialized in the field of research from an external university ؛
-One -Associate (or Full) Professor from the department of electrical engineering in addition to the supervisor of the thesis.
-A session for presentation, defense and approval of the thesis should be done based on the following- :
-At least two members of the examination committee accept their assignment and reply by acceptance letter and approve the thesis for defense within one month.
-The session of defense should be declared within two weeks after receiving of examination committee members' approval letters.

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14. System of Study

Type of program	Courses and Research
Study methods in the program:	Regular
The period to complete the program	Min. 2 Years (4 Terms) Max. 3 Years (6 Terms)
Total Credit Hours for courses & Research	36

15. Study Plan

FR stands for Faculty Requirements.
CE5XX stands for Civil Department Requirements.

First Semester

No.	Course Code	Course Name	اسم المقرر	Credit Hours				Prerequisites
				Lec.	Pr.	Tut.	Total C.H.	
1	CE590	Advanced Project Management 1 (Integration, Scope, Time, Cost Management)		4			4	
2	CE591	Advanced Project Management 2 (Quality, Resource, Communications Management)		4			4	
3	CE594	Health, Safety and Environment HSE Management		4			4	
4	CE595	Soft Skills for the Project Manager		3			3	
5								
		Total Credit Hours		**15**			**15**	

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Second Semester								
No.	Course Code	Course Name	اسم المقرر	Credit Hours				Prerequisites
				Lec.	Pr.	Tut.	Total C.H.	
1	FR501	Research Methodology		3			3	
2	CE592	Advanced Project Management 3 (Risk, Procurement, Stakeholders Management)		4			4	
3	CE593	Project Monitoring and Controlling		4			4	CE590
4	CE596	Pre-Project Planning and Feasibility Analysis		4			4	CE590
5								
	Total Credit Hours			15			15	

Elective Courses								
No.	Course Code	Course Name	اسم المقرر	Credit Hours				Prerequisites
				Lec.	Pr.	Tut.	Total C.H.	
1	N/A							

Course Code	Course Name	Cr. Hrs.
THESIS599	Research	6

16. Admission Requirements:

1. Bachelor of any Engineering and/or related fields, discipline with not less than 65 % grade point average, or equivalent (grade is good).
2. Interview
3. TOEFL / IBT: 60 or equivalent
4. ICDL (Computer Skills): to satisfy university requirements.
5. Arabic Language: to satisfy university requirements.
6. Student number capacity of 20 students per year
7. Transfer Requirements and Courses Equivalency
8. Annex -13: shows the Admission Requirements for the Program.

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17. Graduation Requirements:

Student attendance should not be less than 75%.
Student will graduate after successfully passing the 30 credit hours courses and 6 credit hours Research.
Student must achieve a minimum average score for all courses is 75% degree
Minimum score for any student to pass any credit hours course is 65% degree.
Grading System: From 90% to 100% of total marks Excellent From 80% to less than 90% Very Good From 75% to less than 80% Good From 65% to less than 75% Pass Less than 65% Poor/Fail

18. Learning Resources, Facilities, and Equipment for Running the Program

Learning Resources.
Policies and Procedure for providing and quality assurance of learning resources textbooks, references and other resource materials, including electronic and web-based resources, Journal Database, etc.

- textbooks, reference

electronic library- university database which allows access to most of the international publishing houses

Facilities and Equipment
Policies and Procedure for providing and quality assurance of Facilities and Equipment (Library, laboratories (Structure, material Labs), medical facilities, classrooms, etc.).

:List of laboratories
Computer Laboratory

Project management software

19. Teaching staff:

	Professor	Associate Professor	Assistant Professor	Technicians Assistants
Required Number	1	1	3	N/A
Available Number	1	1	1	N/A
Note:				

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Program Specification

20. Program Management and Regulations

1. Program Management

1.1 Program Structure

(Including boards, councils, units, committees, etc.)

Civil Engineering Department Board
Postgraduate Studies Administration
Vice Dean for Postgraduate Studies
Faculty of Engineering Board
Vice Presidency of the University for Postgraduate Studies

1.2 Stakeholders' Involvement

Describe the representation and involvement of stakeholders in the program planning and development. (Students, professional bodies, scientific societies, alumni, employers, etc.)

The stakeholders were involved in designing the program, including universities, research centers, the public and private sectors, through their participation in a workshop as well as in responding to and submitting a questionnaire.

2. Program Regulations

Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

Decision of the Presidency of the Council of Ministers No. 40 of 2008
Decision of the Presidency of the Council of Ministers No. 141 of 2008
Graduate Studies Guide to Sana'a University

21. Evaluation of Program Quality Matrix:

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time

Note:
Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

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22. List of Annexes

Annex (1)	Academic Standards Curriculum Criteria of the Project Management Institute (PMI) for engineering project management programs.
Annex (2)	Survey of names of similar Accredited Programs at International Universities (Benchmarks) for Engineering Project Management Programs.
Annex (3)	Survey of Intended Learning Outcomes for similar Accredited Engineering Project Management Programs at International Universities.
Annex (4)	Summary of similar Programs (Benchmarks) for Master of Science in engineering project management program.
Annex (5)	Survey of course names of similar programs.
Annex (6)	Survey/Mapping of vision, mission and objectives of similar accredited programs at International Universities (Benchmarks) for Masters of Science in engineering project management programs.
Annex (7)	Mapping of the mission and objectives of the program with the vision, mission and objectives of faculty, and the university.
Annex (8)	Main Themes/Sub-Themes with Relative weight for Program (if needed)
Annex (9)	PILOs Distribution to General Themes for Program (if needed)
Annex (10)	Matrix of mapping program PILO's with courses
Annex (11)	Mapping the benchmarks with PILO's (if needed)
Annex (12)	Mapping Program's Goals with Intended Learning Outcomes
Annex -13	The Admission Requirements for the Program.

23. Attachment of Courses specification and Syllabi of the Program

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Program Specification

ملحق (1) المعايير الأكاديمية للمحتوى لهيئة الاعتماد المقترحة لبرنامج ماجستير إدارة مشاريع هندسية

(Annex-1): Academic Standards Curriculum Criteria of Accreditation Board for Master of Science in Engineering Project Management program

UK Quality Code for Higher Education: https://www.bournemouth.ac.uk/search/msc%20engineering%20project%20management?type=course

MQA: https://admission.utm.my/postgraduate-school-of-civil-engineering/

Project Management Institute's Global Accreditation Center: https://www.uwplatt.edu/program/project-management-online

Finnish national degree system: https://www.vamk.fi/apply/degree_programmes/project_management/

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ملحق (2) مسح أسماء البرامج المعتمدة المماثلة لبرنامج ماجستير ادارة مشاريع هندسية

Annex (2) Survey of names Similar Accredited Programs at International Universities (Benchmarks) for Master of Science in Engineering Project Management Program

#	The Academic Program اسم البرنامج المماثل	The University الجامعة	The Faculty الكليّة	The Department القسم	The Country الدولة	Program Accrediting Body جهة اعتماد البرنامج	Degree Award at Program Completion التي الدرجة يمنحها البرنامج للخريج	Year of accreditation سنة الحصول على الاعتماد	Type of program
The 1st Program البرنامج الاول	MSc. Engineering Project Management	Bournemouth University	Faculty of Science and Technology	Department of Design and Engineering	UK	AACSB The Association to Advance Collegiate School of Business	MSc Engineering Project Management	------	Courses + individual project
The 2nd Program البرنامج الثاني	MSc. Project Management	University Teknologi Malaysia (UTM)	Faculty of Engineering	Department of Civil Engineering	Malaysia	MQA	MSc. Project Management	——	Mixed Mode/Coursework
The 3rd Program البرنامج	Master of Engineering Management	American University of Beirut	Faculty of Engineering and Architectural	Department of Industrial Engineering and	Lebanon	-------	Master of Engineering Management	——	

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#	The Academic Program اسم البرنامج المماثل	The University الجامعة	The Faculty الكليّة	The Department القسم	The Country الدولة	Program Accrediting Body جهة اعتماد البرنامج	Degree Award at Program Completion الدرجة التي يمنحها البرنامج للخريج	Year of accreditation سنة الحصول على الاعتماد	Type of program
الثالث				Management					
The 4th Program البرنامج الرابع	Master of Science in Project Management	University of Wisconsin - Platteville	Faculty of Project Management	N/A	USA	Project Management Institute's Global Accreditation Center	MSc in Project Management	------	Online
The 5th Program البرنامج الخامس	Master of Science in Engineering Management (MEM)	University of Sharjah	Faculty of Engineering	N/A	UAE	-------	MSc in Engineering Management	-------	Mixed Mode/Coursework
The 6th Program البرنامج السادس	Master of Engineering	Vaasan ammattikorkeakoulu, (VAMK) University of Applied Sciences	-----	N/A	Finland	Finnish national degree system	Master of Engineering Project Management	------	Mixed Mode/Coursework

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Program Specification

ملحق (3) مسح مخرجات التعلم في البرامج المماثلة لبرنامج ماجستير ادارة مشاريع هندسية

Annex-3, Survey of Intended Learning Outcomes for Similar Accredited for Master of Science in Engineering Project Management Program at International Universities

Program Intended Outcomes	Suggested PILOs for the Current Program: Engineering Project Management Program at Sana'a University		1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program
	Upon successful completion of a Master of Science in Engineering Project Management Program, graduates should be able to:							
A. Knowledge and Understanding	**A1.**	Describe the various project management knowledge areas.		X	X	X	X	
	A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.	X	X	X		X	
	A3.	Demonstrate knowledge and understanding of methodology, research	X					

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Program Specification

Program Intended Outcomes	Suggested PILOs for the Current Program: Engineering Project Management Program at Sana'a University		1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program
		planning, and analysis techniques.						
	A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently	**X**	**X**	**X**			**X**
B. Cognitive/ Intellectual Skills	**Upon successful completion of a Master of Science in Engineering Project Management program, graduates should be able to:**							
	B1.	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.	**X**	**X**			**X**	**X**

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Program Intended Outcomes	Suggested PILOs for the Current Program: Engineering Project Management Program at Sana'a University		1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program
	B2.	Critically evaluate decision making techniques to aid management judgement;	**X**					
	B3.	Engage in analytical and critical thinking with respect to the planning of engineering design and development projects;			**X**			
	B4	Formulate hypothesis, design and perform experiments/research scientifically to solve and explain observed phenomena.	**X**	**X**			**X**	
C. Practical and	**Upon successful completion of a Master of Science in Engineering Project Management program, graduates should be able to:**							

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Program Intended Outcomes	Suggested PILOs for the Current Program: Engineering Project Management Program at Sana'a University		1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program
Professional Skills	C1.	Apply expertly several different techniques used in the management and control of projects.	X		X	X	X	X
	C2.	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.					X	
	C3.	Initiate, plan, execute, and close out a project utilizing project management concepts.			X	X		
	C4.	Develop, conduct, defend and disseminate academic research or a research project in		X	X			

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Program Intended Outcomes	Suggested PILOs for the Current Program: Engineering Project Management Program at Sana'a University		1st Program	2nd Program	3rd Program	4th Program	5th Program	6th Program
		one of the engineering management areas.						
D. General and Transferable Skills	**Upon successful completion of a Master of Science in Engineering Project Management program, graduates should be able to:**							
	D1.	Prepare a complete thesis and reports, present the ideas clearly and defend them.		X	X			
	D2.	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.		X		X		
	D3.	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.	X	X	X		X	

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Intended Outcomes for Similar Programs

Program 1: Bournemouth University - MSc in Engineering Project Management

A: Subject knowledge and understanding

This program provides opportunities for students to develop and demonstrate knowledge and understanding of:

A1 the reasons for, and benefits and disadvantages of, Knowledge Transfer;
A2 the global context and in particular low-cost manufacturing issues and import / export opportunities;
A3 modern computer tools for product design, evaluation and manufacture, and of their place and role in the various stages of product development;
A4 the implications of design management decisions**;**
A5 methodology, research planning, and experiment design and analysis techniques;
A6 selection and application of different techniques used in the management and control of projects, with special emphasis on project management;
A7 life cycle assessment and influencing sustainable development within the design process.

B: Intellectual skills

This program provides opportunities for students to:

B1 to identify and fully analyses the stages in the product development and life cycle, in terms of time and resources;
B2 gain critical understanding of IPR mechanisms and have the ability to critically evaluate innovation drivers;
B3 critically evaluate decision making techniques to aid management judgement;
B4 identify appropriate sources of information and evaluate them critically in terms of reliability and relevance to a particular topic;
B5 engage in analytical and critical thinking with respect to the planning of engineering design and development projects;
B6 quantify the environmental impact of a product/system through Life Cycle Analysis techniques;
B7 deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data.

C: Practical skills

This program provides opportunities for students to:

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C1 apply expertly a number of different techniques used in the management and control of projects;
C2 be able to apply typical product/service lifecycle scenarios to a project at the initial concept stage.

D: Transferable skills
This program provides opportunities for students to:
D1 demonstrate problem solving skills and the application of knowledge across the discipline areas;
D2 gather, select, and analyses a range of experimental and fieldwork data and present professionally using appropriate media;
D3 distil, synthesis and critically analyses alternative approaches and methodologies to problems and research results reported in literature and elsewhere;
D4 demonstrate initiative, self-direction and exercise personal responsibility for management of own learning;
D5 work autonomously and become reflective learners;
D6 communicate effectively and confidently to appropriate professional and academic standards.

Program 2: University Teknologi Malaysia (UTM) - MSc in Project Management

(a)Technical Knowledge and Competencies

PLO1 Advanced Knowledge Graduates are able to incorporate in-depth relevant knowledge in professional practices for the benefits of both national and international communities. Graduates are able to apply their knowledge and skills in the planning, analysis, design and supervision of works related to the Engineering Project Management discipline.
PLO2 Research Skills Graduates are able to formulate hypothesis, design and perform experiments/research scientifically to solve and explain observed phenomena.
PLO3 Critical Thinking & Problem-Solving Graduates are able to manage conducive working environment qualities problem solving and higher order thinking skills. Graduate are technically competent in solving problems logically, analytically and creatively based on sound facts and ideas.

(b) Generic Skills

PLO4 Ethics, Values and Professionalism Graduates are able to balance professional and ethical responsibilities including contemporary issues and environmental awareness.

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PLO5 Communication Graduates are able to apply a wide range of relevant knowledge through effective oral and written communication. Graduate are able to communicate effectively across a range of contexts and audiences.
PLO6 Lifelong Learning Graduates are able to adopt the latest relevant knowledge and cutting-edge technologies through life-long learning process.

Program 3: American University of Beirut (AUB) – Master of Engineering Management
Upon graduation, MEM graduates will be able to:

- Describe the general theories, methods, and tools for managing (a) resources, (b) finance, (c) risk, and (d) information for enhanced decision-making in engineering and business environments.
- Apply analytical (mathematical, statistical, and computer-based) tools to optimize the performance of socio-technical systems, such as infrastructure, logistics, manufacturing, construction, financial, and healthcare systems.
- Develop scientific managerial skills in fields that promote innovation, such as management of technology, entrepreneurship, financial engineering, and complex project management.
- Design tools for complex systems using empirical approaches that optimize user cognitive and physical wellbeing.
- Develop skills that foster interdisciplinary collaboration, teamwork, and leadership, especially in different project and industrial settings.
- Develop effective verbal and written communication skills.
- Exhibit self-directed learning and critical-thinking skills.
- Develop and defend a thesis topic or a research project in one of the engineering management areas.

Program 4: University of Wisconsin - MSc in Project Management
Graduates will:

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1. Describe and apply the various project management knowledge areas and process groups identified in *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*;
2. Demonstrate effective electronic, verbal, and written communication skills;
3. Apply interpersonal skills in the project environment;
4. Analyze the benefits of and develop appropriate strategies for diversity in the project environment;
5. Apply ethical business principles in the project environment;
6. Initiate, plan, execute, and close out a project utilizing project management concepts.

Program 5: University of Sharjah - MSc in Engineering Management

The learning outcomes for the three options of the MEM program are as follows:

• Apply knowledge, skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently

• Understand the concepts and application of good management practices to foster innovation and sustain global competitiveness

• Identify, analyze, formulate, and solve engineering problems that involve constrained resources taking into account factors such as socio-economic, environmental, health and safety

• Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety

• Demonstrate leadership and effectively communicate skills

• The following is an additional learning outcome for students completing the MEM with Thesis and Courses (Option 3)

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• An ability to conduct and disseminate academic research

Program 6: American University of Beirut (AUB) – Master of Engineering Management

After completing the courses, you have the skills to:

• develop and apply appropriate project management methodologies to suit different projects in local and international contexts

• communicate across culturally diverse projects

• develop the ability to take a leadership role in project, program and portfolio management

• form, select and apply creative problem-solving skills to all stages of the project life cycle

• develop critical thinking and research skills to a range of project and program management contexts

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ملحق (4) مسح ملخص البرامج المماثلة لبرنامج ماجستير ادارة مشاريع هندسية

Annex-4,Summary of Similar Programs (Benchmarks) for Master of Science in Engineering Project Management Program

Summary of Similar Programs (Benchmarks) for Engineering Project Management Program							
	The Similar Programs (Benchmarks)						Current program
	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program	
The Program Tittle	MSc Engineering Project Management	MSc. Project Management	Master of Engineering Management	MSc. Project Management	MSc Engineering Management	Master of Engineering Project Management	MSc. in Engineering Project management
The Faculty	Faculty of Science and Technology	Faculty of Engineering	Faculty of Engineering	-------	Faculty of Engineering	-----	Faculty of Engineering
The University	Bournemouth University	University Teknologi Malaysia (UTM)	American University of Beirut (AUB)	University of Wisconsin	University of Sharjah	Vaasan ammattikorkeakoulu, (VAMK) University of Applied Sciences	**Sana'a University**
The Country	UK	Malaysia	Lebanon	USA	UAE	Finland	**Yemen**

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Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			

Sana'a University
Faculty of Engineering
Department: Civil Engineering
Title of the Program: Master of Science in Engineering Project Management

Program Specification

Summary of Similar Programs (Benchmarks) for Engineering Project Management Program							
	The Similar Programs (Benchmarks)						Current program
	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program	
Type of program	Courses + individual project	Mixed Mode/Coursework	Mixed Mode/Coursework	Online	Mixed Mode/Coursework	Mixed Mode/Coursework	**Courses and Research**
Study methods in the program:	Full and part-time regular	Full and part-time regular	Full time regular	Full and part-time online	Full time	Full time and part time regular and online	**Full-time**
Number of semesters	Full time 12-24 months Part-time 24-36 months	Full time 3 semesters Part-time 4-8 semesters	Full time 4 semesters	Full time 4 semesters Part time 5-10	Full and part time 4 semesters	Full time and part time 4 semesters	**4**
Total Credit Hours (without Thesis)	120 (90 ECTS) equivalents to 27 credit hours	36credit hours	24 credits	30 credit hours	18 credit hours	30 credit hours	**30**

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Program Specification

Summary of Similar Programs (Benchmarks) for Engineering Project Management Program							
	The Similar Programs (Benchmarks)						Current program
	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program	
	Including equivalent 9 credits individual project						
Credit Hours for compulsory courses	120 (equivalent 18 credit hours)	18 credit hours	12 credit hours	15 credit hours	12 credit hours	30 credit hours	**8**
Credit Hours for Electives courses	Full and part-time regular	Full and part-time regular	Full time regular	Full and part-time online	Full time	Full time and part time regular and online	**30**
No. of Courses for Electives courses	0	18 credit hours	12 hours	15 credit hours	6 credit hours	---	**0**

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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Summary of Similar Programs (Benchmarks) for Engineering Project Management Program							
	The Similar Programs (Benchmarks)						Current program
	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program	
No. of Courses for compulsory courses	6	6	4	5	4	6	**0**
Complementary courses to join the program and their number	None	None	None	None	None	None	-
Credit Hours for Thesis	0	10	6	6	15	30	**6**
Total Credit Hours for courses & Thesis	180 (equivalent 27 credit hours)	46 credit hours	30 credit hours	36 credit hours	33 credit hours	60 credit hours	**36**
The period for thesis completion	N/A	1-6 semesters (each semester is	1 year	1 year	1 year	1 year	**2 Semesters**

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Summary of Similar Programs (Benchmarks) for Engineering Project Management Program							
	The Similar Programs (Benchmarks)						Current program
	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program	
		14 weeks)					
The min. period to complete the program	12 months	12 months	2 years	3 semesters	------	1 year	**2 Years (Min. years for courses: 1)**
The max. period to complete the program	36 months	48 months	-----	5 years	------	2 years	**1+2 Years (Max. years for courses 1)**

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			

Program Specification

ملحق (5) مسح أسماء المقررات الدراسية في البرامج المماثلة لبرنامج ماجستير ادارة مشاريع هندسية
Annex-5, Survey of Course Names of Similar Engineering Project Management Program

University	Bournemouth University	University Teknologi Malaysia (UTM)	American University of Beirut (AUB)	University of Wisconsin	University of Sharjah	Vaasan ammattikorkeakoulu, (VAMK) University of Applied Sciences	
Faculty	Faculty of Science and Technology	Faculty of Engineering	Faculty of Engineering	------	Faculty of Engineering	----	
Program	MSc Engineering Project Management	MSc. Project Management	Master of Engineering Management	MSc. Project Management	MSc Engineering Management	Master of Engineering Project Management	
Country	UK	Malaysia	Lebanon	USA	UAE	Finland	
No. of Courses	6	12	8	10	6	6	
Total Cr. Hrs.	180	36	30	36	33	60	

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Total Years	1-3	1-4	2	2	2	1-2	
No	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**
1	Research Methods	Research Methodology		Research Methodology			Research Methodology
2		Planning & Scheduling Principle of Engineering Management	Project Planning Scheduling and Control	Project Management Techniques I			Advanced Project Management 1 (Integration, Scope, Time, Cost Management)
3		Project Quality Management		Project Management Techniques II	Quality Engineering		Advanced Project Management 2 (Quality, Resource, Communications Management)

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4				Project Risk Management Project Procurement Management			Advanced Project Management 3 (Risk, Procurement, Stakeholders Management)
5						Project Monitoring and Controlling	Project Monitoring and Controlling
6					Safety Engineering Management	Professional Qualification in PM	Health, Safety and Environment HSE Management
7		Organizational Design & Governance	Project Deliverance and Contracts				Soft Skills for the Project Manager
8			Pre-Project Planning and Feasibility Analysis				Pre-Project Planning and Feasibility Analysis

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ملحق (6) مسح الرؤية والرسالة والاهداف البرامج المعتمدة المماثلة لبرنامج إدارة مشاريع هندسية

Annex (6) Survey/ Mapping of Vision, Mission and Objectives of Similar Accredited Programs at International Universities (Benchmarks) for Master of Science in Engineering Project Management program

	The 1st Program	The 2nd Program	The 3rd Program	The 4th Program	The 5th Program	The 6th Program
Country	UK	Malaysia	Lebanon	USA	UAE	Finland
University	Bournemouth University	University Teknologi Malaysia (UTM)	American University of Beirut (AUB)	University of Wisconsin - Platteville	University of Sharjah	Vaasan ammattikorkeakoulu, (VAMK) University of Applied Sciences
Faculty	Faculty of Science and Technology	Faculty of Engineering	Faculty of Engineering	Faculty of Project Management	Faculty of Engineering	-----
Department/ Program	Department of Design and Engineering / MSc Engineering Project Management	Department of Civil Engineering	N/A	N/A	N/A	N/A
Study Duration	1-3 years	1-4 years	2 years	1-5 years	2 years	1-2 years
Program Accrediting Body	AACSB The Association to Advance Collegiate School of	MQA	-----	Project Management Institute's	-----	Finnish national degree system

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Program Specification

	Business			Global Accreditation Center		
Website Link	https://www.bournemouth.ac.uk/search/msc%20engineering%20project%20management?type=course	https://admission.utm.my/postgraduate-school-of-civil-engineering/	https://www.aub.edu.lb/msfea/iem/IE-MEM/Pages/default.aspx	https://www.uwplatt.edu/program/project-management-online	https://www.sharjah.ac.ae/en/academics/colleges/gsr/depts/gradStudies/bylaws/Pages/default.aspx	https://www.vamk.fi/apply/degree_programmes/project_management/
Department Vision	Develop an understanding of project management methods and tools, and how to employ them in the planning and execution of projects, as well as becoming fully aware of engineering design methods and tools.					
Department Mission				-		
Department Objectives						
Program Mission						

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Program Objectives	This program aims to develop creative, innovative and resourceful graduates, who: understand project management methods and tools, and are able to employ them in the planning and execution of projects; □ are fully aware of engineering design methods and tools available and investigate, select and learn to employ those appropriate to the needs of their industries; □ are fully conversant with contemporary information resources and use them effectively and efficiently; □ are able to document and communicate, using	1-Mastery of competencies and integration of knowledge required in the engineering profession. An appreciation of the value of lifelong learning and possessing enthusiasm and strong commitment to continued acquisition of new knowledge and skills. 2-Advanced leadership and team working skills that allow environmental engineers and professionals to become visionary	The Engineering Management (EM) program prepares graduate students to assume the responsibilities of professional engineering management. The EM program provides students from all engineering backgrounds with the necessary leadership abilities, technical expertise, and communication skills to meet the need for both tech-savvy and business-savvy professionals. To achieve this aim, the EM curriculum combines business basics, quantitative methods, and	The purpose of the Master of Science in Project Management is to serve graduate students in the online environment by improving their business and project management competencies, providing them with professional development opportunities as project management	The main goals of the MEM program are: • To prepare engineers from various specializations to address advanced and challenging engineering problems in their discipline taking into account the technical and socio-economic factors and implications. • To prepare its graduates to assume leading roles in their organizations in the determination of best approaches to manage changes in the engineering processes and benefit from	The Master's Degree in Project Management is a professional higher education degree. The program focuses on providing students with skills and competencies to work in both local and an international project environment. This master´s degree in Project Management is suitable for business and engineering professionals interested in project management who are seeking a master´s degree in project management and want to assume project managerial and leadership positions in their organizations. Students include

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	oral and written presentations, project plans and results; □ have a critical understanding how sustainability impacts the management of the engineering management process; □ are able to plan, conduct and report on small engineering research projects.	and inspirational leaders. 3-Highly developed oral and written communications skills that fit at all level, appropriate to the field of engineering. 4-An appreciation of the ethics and integrity in management, leadership and good governance and responsibility to their professions and community.	behavioral science in a practical, problem-solving framework. Furthermore, the program is flexible and EM students can tailor their courses to suit their needs and preferences. Students can select from three areas of concentration: -Financial and Industrial Engineering -Project and Program Management -Management of Technology and Entrepreneurship.	practitioners, and enhancing their prospects for continued advancement in their chosen industry or field of endeavor.	relevant technological innovations; • To equip its graduates with the knowledge and skills to interact and communicate effectively with professionals from other specializations within and outside their organizations. • To equip its graduates with the knowledge, skills and awareness of the long-term sustainability factors associated with the adoption of any engineering process or product.	project managers, IT and energy professionals, business consultants, etc. The program also includes courses which can lead to professional certification in project management.

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Program Specification

ملحق (7) موائمة رسالة وأهداف البرنامج مع رؤية ورسالة واهداف الكلية والجامعة

Annex (7) Mapping of mission and objective of the program with vision, mission and objectives of faculty, and university

Mapping of program vision with Department, faculty, and university vision			
University Vision	**Faculty Vision**	**Department vision**	**Program vision**
Sana'a University aspires to achieve a national leading role in teaching, learning, scientific research and community service; and to be among the best regional universities and the foremost house of expertise and think tank in Yemen.	To excel in engineering education & scientific research with distinction at the local and regional levels.		To be a distinguished Master program in Engineering Project Management locally and regionally.

Mapping of program mission with Department, faculty and university mission			
University Mission	**Faculty Mission**	**Department Mission**	**Program Mission**
To contribute to the sustainable development efforts by providing an accredited higher education environment and excellent research services within a fruitful national partnership based on transparency, professionalism and creativity.	To provide excellent and accredited engineering education to meet the development needs and match the labor market requirements locally and regionally.	To provide students with good quality Civil Engineering education that prepares them to be qualified and committed professionals who could pursue graduate studies and research and play a leading role in the sustainable development of the country and its integration into the regional economy.	To graduate distinguished Master holders in the field of engineering project management through a strong academic program, qualified staff, and suitable research infrastructure that meet local development requirements and regional labor market needs.

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Mapping of program objectives with Department, faculty, and university objectives			
University Objectives	**Faculty Objectives**	**Department Objectives**	**Program Objectives**
To provide specialized and in-depth academic opportunities for students in different fields of knowledge to meet the country's needs of specialties, technicians and experts, with special focus on the following:	To offer study programs in various fields of knowledge and equip students with required knowledge and scientific and know-how skills to utilize them in resolving problems effectively and efficiently.	provide a high-quality educational experience through an appropriate depth over the full range of core engineering subject areas for undergraduate and postgraduate programs,	To develop students who understand project management methods and tools, and are able to employ them in the planning and execution of projects
To boost the level and quality of preparation and qualification tasks.	To develop positive trends towards engineering science and its accelerating developments and enable students to use the techniques and methods of conducting scientific research in engineering fields.	applying the quality assurance standards and targeting the academic accreditation levels (local, regional and international levels).	To bridge the gap between the academic and industrial and technological environments.
To create a general culture aiming at developing the elements of sound Islamic personality and the proper cognitive and scientific training.	To develop skills of scientific, innovative and critical thinking as well as the concept of continuous self-education.	Serving the community and labor market needs through the consultancy, research, laboratory tests and training services.	To provide graduates who are able to document and communicate, using oral and written presentations, project plans and results;
To stabilize the true Islamic vision emanating from the	To strengthen scientific ties with national and international		To provide graduates with up-to-date advanced knowledge and skills needed to plan, manage and

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broad horizons of Islamic knowledge and its perception of the universe, man and life.	colleges, scientific bodies, and research & development centers.		execute projects successfully.
To develop innovative and critical scientific thinking skills.	To provide technical and specialized studies and consultations to various state bodies and institutions, both public and semi-public, and utilize them in resolving the environment and society issues to promote sustainable development.		To graduate researchers in engineering project management who can pursue further studies and research contributing to the scientific research community.
To provide students with the required knowledge and scientific and applied skills for solving problems effectively and efficiently.	To develop a spirit of co-operation, group work, effective leadership, sense of responsibility, and ethical commitment.		To provide graduates able to effectively contribute to the engineering project management profession by applying ethical practices and communication skills, sharing innovative and clear ideas and pursuing further education through lifelong learning.

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ملحق (8) المساقات الرئيسية واوزانها الفرعية لبرنامج ماجستير ادارة مشاريع هندسية

Appendix (8) Main Themes/Sub-Themes with Relative weight for the Engineering Project Management Program.

No.	Themes	Credit Hours	Courses Number	Relative weight for Theme	Sub-Themes
0	N/A				-
1					-
2					-
3					-
4					-
5					-
	Total			**100%**	

* This total is the overall total of both Compulsory and Elective courses.

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ملحق (9) توزيع مخرجات التعلم لبرنامج ماجستير ادارة مشاريع هندسية مع المساقات الرئيسية

Appendix (9) P- ILOs Distribution to Main Themes for Master of Science in Engineering Project Management program

No	PILOs	Themes							
		1st Theme	2nd Theme	3rd Theme	4th Theme	5th Theme	6th Theme	7th Theme	8th Theme
1	A1	N/A							
2	A2								
3	A3								
4	A4								
5	B1								
6	B2								
7	B3								
8	B4								
9	C1								
10	C2								
11	C3								
12	C4								
13	D1								

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14	D2								
15	D3								

ملحق (10) موائمة مخرجات تعلم برنامج ماجستير إدارة مشاريع هندسية مع المقررات

Appendix (10) Mapping Program Intended Learning Outcomes with courses for Master of Science in Engineering Project Management program

Course Name	Program Intended Learning Outcomes (P-IOLs)															
	(A)				(B)				(c)				(D)			
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
Research Methodology													X	X	X	X
Advanced Project Management 1 (Integration, Scope, Time, Cost Management)	X	X		X	X	X	X		X	X	X					
Advanced Project Management 2 (Quality, Resource, Communications Management)	X	X		X	X	X	X		X	X	X					
Advanced Project Management 3 (Risk, Procurement, Stakeholders Management)	X	X		X	X	X	X		X	X	X					
Project Monitoring and Controlling	X	X		X	X	X	X		X	X	X					

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Course Name	Program Intended Learning Outcomes (P-IOLs)															
	(A)				(B)				(c)				(D)			
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
Health, Safety and Environment HSE Management		X		X	X		X		X	X				X	X	
Soft Skills for the Project Manager				X	X	X	X		X			X	X	X	X	
Pre-Project Planning and Feasibility Analysis		X	X	X	X	X	X		X	X		X	X			
Thesis599			X					X	X	X		X	X		X	

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ملحق (11) موائمة مخرجات تعلم برنامج ماجستير إدارة مشاريع هندسية مع المرجعيات

Appendix (11) Mapping Program Intended Learning Outcomes with the benchmarks for Master of Science in Engineering Project Management program

(IOLs) Intended Learning Outcomes																Standards and Benchmarks
(A)				(B)				(c)				(D)				
A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	

ملحق (12) مواءمة أهداف البرنامج مع مخرجات التعلم المقصودة لبرنامج ماجستير ادارة مشاريع هندسية

Annex-12, Alignment of Engineering Project Management Program Objectives with Program Intended Learning Outcomes

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Program Specification

Program Objectives رقم ونص المعيار	Program Intended Learning Outcomes (PILOs) رموز مخرجات التعلم للبرنامج PILOs														
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3
1- To develop students who understand project management methods and tools, and are able to employ them in the planning and execution of projects		X		X	X	X	X		X	X	X		X		
To bridge the gap between the academic and industrial and technological environments.		X	X		X	X	X	X			X	X	X		X
To provide graduates who are able to document and communicate, using oral and written presentations, project plans and results;												X	X		X

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Program Specification

Program Objectives رقم ونص المعيار	Program Intended Learning Outcomes (PILOs) رموز مخرجات التعلم للبرنامج PILOs														
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3
To provide graduates with up-to-date advanced knowledge and skills needed to plan, manage and execute projects successfully.		X		X	X	X	X		X	X	X				
To graduate researchers in engineering project management who can pursue further studies and research contributing to the scientific research community.			X					X				X	X		X
To provide graduates able to effectively contribute to the engineering project management profession by applying ethical practices and		X				X	X			X	X			X	

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Program Objectives رقم ونص المعيار	Program Intended Learning Outcomes (PILOs) رموز مخرجات التعلم للبرنامج PILOs														
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3
communication skills, sharing innovative and clear ideas and pursuing further education through lifelong learning.															

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Program Intended Learning Outcomes (PILOs):

E. Knowledge and Understanding Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:	
A1.	Describe the various project management knowledge areas.
A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
A3.	Demonstrate knowledge and understanding of methodology, research planning, and analysis techniques.
A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently
F. Intellectual Skills Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:	
B1.	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
B2.	Critically evaluate decision making techniques to aid management judgement;
B3.	Engage in analytical and critical thinking with respect to the planning of engineering design and development projects;
B4.	Formulate hypothesis, design and perform experiments/research scientifically to solve and explain observed phenomena.
G. Practical and Professional Skills	

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Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:	
C1.	Apply expertly several different techniques used in the management and control of projects.
C2.	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.
C3.	Initiate, plan, execute, and close out a project utilizing project management concepts.
C4.	Develop, conduct, defend and disseminate academic research or a research project in one of the engineering management areas.
H. Key Transferrable Skills Upon successful completion of the Master of Science in Engineering Project Management Program, graduates should be able to:	
D1.	Prepare a complete thesis and reports, present the ideas clearly and defend them.
D2.	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.
D3.	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.

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المقررات الدراسية

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1- Course Specification of Research Methodology

Course Code (FR 501)

I. General Information About the Course:						
1.	**Course Title:**	Research Methodology				
2.	**Course Code and Number:**	FR 501				
3.	**Credit Hours:**	**Credit Hours**			**Total**	
		Lecture	Practical	Seminar/Tutorial		
		3	**-**	**-**	**3**	
4.	**Study Level and Semester:**	First Semester.				
5.	**Pre-requisites (if any):**	None.				
6.	**Co-requisites (if any):**	None.				
7.	**Program (s) in which the course is offered:**	MSc. in Mechatronics Engineering Program.				
8.	**Language of teaching the course:**	English Language.				
9.	**Study System:**	Courses & Thesis.				
10.	**Prepared By:**	Assoc. Prof. Dr. Abdul-Malik Ebrahim Momin.				
11.	**Reviewed by:**					
12.	**Date of Approval:**					

II. Course Description:

This course introduces and discusses approaches, strategies, and data collection methods relating to research in social sciences. Students will consider how to select the appropriate methodology for use in a study to be performed. Additionally, these students will learn how to collect data based on different data collection methods, construct these tools, and pilot them before they become ready for use. Finally, this course targets the requirements for an academic work, considering aspects related to language, writing style, and lay-out. To complete this final stage, students will learn to write a comprehensive research proposal that may be conducted in the future.

III. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Research Methodology Course,** the graduates will be able to:

a1 . Describe the basic knowledge in the main subjects related to the Research Methodology.

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a2 .	Establish the main issues in the technology used in the field of the course.
a3 .	Express the basic principles in the development of the course.
a4 .	Identify research principles and different methods in the related field of the Mechatronics.
b1 -	Explore suitable methodologies and technologies in the analysis of Research Methodology pattern,
b2-	Propose the analysis in the area of the Research Methodology Course.
b3-	Analyze different systems to meet the required course.
c1-	Perform detailed research in the area of the related course.
c2-	Implement advanced methodologies and skills in the related course**.**
c3 -	Conduct the acquired knowledge in the analysis of the new approaches related to the course.
d1-	Examine a complete work and different tasks related to the course.
d2-	Evaluate the awareness of the ethical principles and utilized knowledge int the related course.
d3-	Review the advance knowledge in the related course.
d4-	Estimate the learning ability and skills in the related course.

IV. Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs)

CILOs		PILOs	
a. Knowledge and Understanding: Upon successful completion of **the Research Methodology Course**, the graduates will be able to:		**A. Knowledge and Understanding:** Upon successful completion of the **MSc. In Mechatronics Engineering Program**, the graduates will be able to:	
a1.	Describe the basic knowledge in the main subjects related to the Research Methodology.	**A1.**	Demonstrate in-depth understanding of Applied Mathematics in Mechatronics Engineering, Control System, Computer Engineering and Science, and Electronics to design more functional, adaptable and cost-effective products.
a2.	Establish the main issues in the technology used in the field of the related course.	**A2.**	Recognize and explain the contemporary engineering technologies and issues in the field of Mechatronics Engineering.

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a3.	Express the basic principles in the development of the course.	**A3.**	Explain in-depth the principles of sustainable design and development of Mechatronics engineering.
a4.	Identify research principles and different methods in the related field of the Mechatronics.	**A4.**	Demonstrate research principles and methods applicable to the field of work or academic in Mechatronics engineering and related fields.
b. Cognitive/ Intellectual Skills: Upon successful completion of the **Research Methodology Course,** the graduates will be able to:		**B. Cognitive/ Intellectual Skills:** Upon successful completion of the **MSc. In Mechatronics Engineering Program,** the graduates will be able to:	
b1.	Explore suitable methodologies and technologies in the analysis of Research Methodology pattern,	**B1.**	Apply appropriate principles, methodologies, techniques, tools and packages in the analysis, development and evaluation of mechatronics engineering systems.
b2.	Propose the analysis in the area of the Research Methodology Course.	**B2.**	Identify, formulate and analyze research and solve complex Mechatronics engineering problems.
b3.	Analyze different systems to meet the required course.	**B3.**	Design Mechatronics system, component, or process to meet desired needs within realistic constraints.
c. Professional and Practical Skills: Upon successful completion of the **Research Methodology Course,** the graduates will be able to:		**C. Professional and Practical Skills:** Upon successful completion of the **MSc. In Mechatronics Engineering Program,** the graduates will be able to:	
c1.	Perform detailed research in the area of the related course.	**C1.**	Conduct research to solve Mechatronics Engineering problems.
c2.	Implement advanced methodologies and skills in the related course.	**C2.**	Use advanced methodologies and skills to solve Mechatronics Engineering problems.
c3.	Conduct the acquired knowledge in the analysis of the new approaches related to the course.	**C3.**	Apply acquired knowledge of analysis and design for mechatronics engineering systems and implementation process.
d. Transferable Skills: Upon successful		**D. Transferable Skills:** Upon successful	

completion of the **Research Methodology Course,** the graduates will be able to:		completion of the **MSc. In Mechatronics Engineering Program,** the graduates will be able to:	
d1.	Examine a complete work and different tasks related to the course.	**D1.**	Prepare a complete thesis and term-courses works/ tasks, write their documents and defend on them.
d2.	Evaluate the awareness of the ethical principles and utilized knowledge int the related course.	**D2.**	Demonstrate ethical principles, awareness of professional and ethical responsibility as well as knowledge of the standards utilized in related fields.
d3.	Review the advance knowledge in the related course.	**D3.**	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.
d4.	Estimate the learning ability and skills in the related course.	**D4.**	Independent learning ability, self-direction and independence leading to the ability to continue to develop their knowledge understanding and skills through further professional development.

V. Alignment of CILOs to Teaching and Assessment Strategies

a. Alignment of Knowledge and Understanding CILOs:

Knowledge and Understanding CILOs		Teaching Strategies	Assessment Strategies
a1.	Describe the basic knowledge in the main subjects related to the Research Methodology.	▪ Lectures, ▪ Seminars, ▪ Self-Learning Problems/Studies, ▪ Case study, ▪ Group/Individual Projects and Studies, ▪ Field Work, ▪ Active learning, ▪ Computer hands-on sessions.	▪ Oral & Writing Exams, ▪ Reports, ▪ Survey, ▪ Assignments.

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a2.	Establish the main issues in the technology used in the field of the related course.	▪ Lectures, ▪ Seminars, ▪ Self-Learning, Problems/Studies, ▪ Case study, ▪ Group/Individual Projects and Studies, ▪ Field Work, ▪ Active learning, ▪ Computer hands-on sessions.	▪ Oral & Writing Exams, ▪ Reports, ▪ Survey, ▪ Assignments.
a3.	Express the basic principles in the development of the course.	▪ Lectures, ▪ Seminars, ▪ Self-Learning Problems/Studies, ▪ Case study, ▪ Group/Individual Projects and Studies, ▪ Field Work, ▪ Active learning, ▪ Computer hands-on sessions.	▪ Oral & Writing Exams ▪ Reports, ▪ Survey, ▪ Assignments
a4.	Identify research principles and different methods in the related field of the Mechatronics.	▪ Lectures, ▪ Seminars, ▪ Self-Learning, ▪ Problems/Studies, ▪ Case study, ▪ Group/Individual Projects and Studies, ▪ Field Work, ▪ Active learning, ▪ Computer hands-on sessions.	▪ Oral & Writing Exams ▪ Reports, ▪ Survey, ▪ Assignments.

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b. Alignment of Intellectual Skills CILOs:			
Intellectual Skills CILOs		**Teaching Strategies**	**Assessment Strategies**
b1.	Explore suitable methodologies and technologies in the analysis of Research Methodology pattern.	▪ Lectures, ▪ Project Supervision, ▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	▪ Oral & Writing Exams, ▪ Reports, ▪ Survey, ▪ Assignments.
b2.	Propose the analysis in the area of the Research Methodology Course.	▪ Lectures, ▪ Project Supervision, ▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	▪ Oral & Writing Exams, ▪ Reports, ▪ Survey, ▪ Assignments.
b3.	Analyze different systems to meet the required course.	▪ Lectures, ▪ Project Supervision, ▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	▪ Oral & Writing Exams, ▪ Reports, ▪ Survey, ▪ Assignments.

c. Alignment of Professional and Practical Skills CILOs:			
Professional and Practical Skills CILOs		**Teaching Strategies**	**Assessment Strategies**
c1.	Perform detailed research in the area of the related course.	▪ Lectures, ▪ Project Supervision,	▪ Seminar Report, ▪ Written Research

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		▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	Proposal, ▪ Thesis and Publication.
c2.	Implement advanced methodologies and skills in the related course.	▪ Lectures, ▪ Project Supervision, ▪ Laboratory Works, ▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	▪ Seminar Report, ▪ Written Research Proposal, ▪ Thesis and Publication.
c3.	Conduct the acquired knowledge in the analysis of the new approaches related to the course.	▪ Lectures, ▪ Project Supervision, ▪ Laboratory Works, ▪ Self-Learning, ▪ Case Study, ▪ Simulation Exercises, ▪ Independent Study, ▪ Analysis and Problem Solving, ▪ Brainstorming, ▪ Presentations.	▪ Seminar Report, ▪ Written Research Proposal, ▪ Thesis and Publication.

d. Alignment of Transferable (General) Skills CILOs:

Transferable (General) Skills CILOs		Teaching Strategies	Assessment Strategies
d1.	Examine a complete work and different tasks related to the course.	▪ Dissertation Defenses and Presentation, ▪ Independent Study, ▪ Presentation,	▪ Written Research Proposal, ▪ Thesis and Publication,

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		▪ Brainstorming, ▪ Presenting Researches, ▪ Publish Research Papers.	▪ Written Exam, ▪ Assignments, ▪ Field Work, ▪ Survey, ▪ Presentation, ▪ Written Report.
d2.	Evaluate the awareness of the ethical principles and utilized knowledge in the related course.	▪ Dissertation Defenses and Presentation, ▪ Independent Study, ▪ Presentation, ▪ Brainstorming, ▪ Presenting Researches, ▪ Publish Research Papers.	▪ Written Research Proposal, Thesis and Publication, ▪ Written Exam, ▪ Assignments, ▪ Field Work, ▪ Survey, ▪ Presentation, ▪ Written Report.
d3.	Review the advance knowledge in the related course.	▪ Dissertation Defenses and Presentation, ▪ Independent Study, ▪ Presentation, ▪ Brainstorming, ▪ Presenting Researches, ▪ Publish Research Papers.	▪ Written Research Proposal, ▪ Thesis and Publication, ▪ Written Exam, ▪ Assignments, ▪ Field Work, ▪ Survey, ▪ Presentation, ▪ Written Report.
d4.	Estimate the learning ability and skills in the related course	▪ Dissertation Defenses and Presentation, ▪ Independent Study, ▪ Presentation, ▪ Brainstorming, ▪ Presenting Researches, ▪ Publish Research Papers.	▪ Written Research Proposal, ▪ Thesis and Publication, ▪ Written Exam, ▪ Assignments, ▪ Field Work, ▪ Survey, ▪ Presentation, ▪ Written Report.

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VI. Course Content

1. Theoretical Aspect

Order	Topic List / Units	Sub -Topics List	Number of Weeks	Contact Hours	Course CILOs
1.	The Literature Review.	▪ Needs of the Literature Review. ▪ Objectives and Sources of Literature Review. ▪ How to conduct the Literature Review?	2	6	a1, a2, d3, d4
		▪ Reporting the Literature Review.			
2.	Introduction to the Research Methodology.	▪ Definitions and Meaning of Research. ▪ Objectives of Research.	2	6	a3, b1, c1, d3, d4
		▪ General Introduction to the Course. ▪ General Characteristics of the Research. ▪ Criteria of the Good Research. ▪ Scientific Thinking.			
3.	The Research Approach.	▪ The Philosophical Background.	2	6	a1, a3, b2, c1, c2, c3
		▪ The Qualitative Approach.			
		▪ The Quantitative Approach. ▪ Criteria for selecting a Research Approach.			
4.	The Research Strategy.	▪ What are the Research Strategies? ▪ Case Studies. ▪ Ground Theory. ▪ Action Research.	1	3	a2, a4, b1, b3, c2
5.	Data Collection Methods.	▪ Questionnaire. ▪ Design a template for the Questionnaire.	1	3	a1, a3, b1, b2, c1, d1, d4
		▪ Interviews. ▪ Focus Groups. ▪ Observations.			
		▪ Case Study.			
6.	Sampling.	▪ Definition of the Sampling.	2	6	a1, a2.

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		▪ Functions of Populations and Sampling. ▪ Methods of Sampling. ▪ Characteristics of a Good Sample. ▪ The Sample Cycle.			b1, b2, c3, d1, d3, d4
7.	The Research Hypothesis.	▪ Meaning of the Hypothesis. ▪ Importance of the Hypothesis. ▪ Kinds of the Hypothesis. ▪ Characteristics of the Good Hypothesis. ▪ Variables in the Hypothesis. ▪ Formulating the Hypothesis. ▪ Testing the hypothesis. ▪	2	6	a2, a4, b1, b3, c3, d2
8.	Developing Research Proposal.	▪ What is a Research Proposal? ▪ Components of the Research Proposal. ▪ Google Search. ▪ Types of Journals. ▪ Journal Impact Factor. ▪ Journal Paper and Evaluation.	2	6	a1, a2, a3, a4, b1, b2, b3, c1, c2, c3, d1, d2, d3, d4
Number of Weeks /and Contact Hours Per Semester			**14**	**42**	

2. Practical Aspect (None)

Order	Practical / Tutorials Topics	Number of Weeks	Contact Hours	Course ILOs
1				
Number of Weeks /and Contact Hours Per Semester				

3. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1.	Assignment of the Chapter One (The Literature Review).	2	6	a1, a2, d3, d4
2.	Assignment of the Chapter Two (Introduction to the	2	6	a3, b1, c1, d3,

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3. Tutorial Aspect:				
No.	**Tutorial**	**Number of Weeks**	**Contact Hours**	**Learning Outcomes (CILOs)**
	Research Methodology).			d4
3.	Assignment of the Chapter Three (The Research Approach).	2	6	a1, a3, b2, c1, c2, c3
4.	Assignment of the Chapter Four (The Research Strategy).	1	3	a2, a4, b1, b3, c2
5.	Assignment of the Chapter Five (Data Collection Methods).	1	3	a1, a3, b1, b2, c1, d1, d4
6.	Assignment of the Chapter Six (Sampling).	2	6	a1, a2. b1, b2, c3, d1, d3, d4
7.	Assignment of the Chapter Seven (The Research Hypothesis).	2	6	a2, a4, b1, b3, c3, d2
8.	Assignment of the Chapter Eight (Developing Research Proposal).	2	6	a1, a2, a3, a4, b1, b2, b3, c1, c2, c3, d1, d2, d3, d4
		14	42	

VII. Teaching Strategies:

1. Active Lectures.
2. Seminar.
3. Self-learning Problems.
4. Computer hands-on Sessions.
5. Analysis and Problem Solving.
6. Brain Storming.
7. Presentation.
8. Simulation Exercises.
9. Publish Research Papers.

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VIII. Assessment Methods of the Course:

1. Reports.
2. Assignments.
3. Survey.
4. Written Research Proposal.
5. Thesis and Publications.
6. Presentation.

IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due	CILOs (symbols)
1.	Homework (every week).	Groups	10	Every Week	a1, a2, a3, a4, b1, b2, b3, c1, c2, c3, d1, d2, d3, d4
2.	Mini/Major Project.	Groups	10	After the Eight Week	a1, a2, a3, a4, b1, b2, b3, c1, c2, c3, d1, d2, d3, d4
3.	Case studies.	Groups	10	Last Week	a1, a2, a3, a4, b1, b2, b3, c1, c2, c3, d1, d2, d3, d4
	Total Score		**30**	==	===

X. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	CILOs
1.	**Tasks and Assignments**	Every Week	15	15	a1, a2, a3, a4, b1, b2,
2.	**Quizzes**	Two Times	15	15	a1, a2, a3, a4, b1, b2,
3.	**Mid-term Exam**	9 th	20	20	a1, a2, a3, a4, b1, b2,
4.	**Final Exam (Practical)**	16 th	50	50	a1, a2, a3, a4, b1, b2,
Total			**100**	**100%**	

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XI. Learning Resources :

1. Required Textbook(s) :

1. Deb. D,. Dey, R. & Balas, V. E. (2019), Engineering Research Methodology, (Vol. 15) Springer,
2. Denscombes, M. (2010), The Good Research Guide. Open University Press.
3. Hayhoe, G.F. & Brewer, P. E. (2021). A research primer for technical communications methods. Routledge, Taylor & Francis Group.
4.

2. Essential References:

1. Dawson, C. (2007), A practical guide to research methods: a user friendly manual for mastering research techniques and projects.
2.

3. Electronic Materials and Web Sites *etc.*

1. https://endnote.com
2. https://www.turnitin.com

XII الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4
الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب.	5

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	- في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	الانتحال Plagiarism: – في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

Course Plan (Research Methodology)

I. Information about Faculty Member Responsible for the Course:

Name	Assoc. Prof. Dr. Abdul-Malik Ebrahim Momin	Office Hours					
Location &Telephone No.	777943334	SAT	SUN	MON	TUE	WED	THU
E-mail	dramalikmomin@yahoo.com						

II. General information about the course:

1.	Course Title	Research Methodology			
2.	Course Code and Number	FR 501			
3.	Credit Hours	Credit Hours			Total
		Lecture	Practical	Seminar/Tutorial	
		3	-	-	3
4.	Study Level and Semester	First Semester.			
5.	Pre-requisites	None.			
6.	Co –requisite	None.			
7.	Program (s) in which the course is offered	Mechatronics Engineering Program.			
8.	Language of teaching the course	English Language.			
9.	Location of teaching the course	Mechatronics Engineering Department.			

III. Course Description:

This course introduces and discusses approaches, strategies, and data collection methods relating to research in social sciences. Students will consider how to select the appropriate methodology for use in a study to be performed. Additionally, these students will learn how to collect data based on different data collection methods, construct these tools, and pilot them before they become

ready for use. Finally, this course targets the requirements for an academic work, considering aspects related to language, writing style, and lay-out. To complete this final stage, students will learn to write a comprehensive research proposal that may be conducted in the future.

IV. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Research Methodology Course,** the graduates will be able to:

a1 . Describe the basic knowledge in the main subjects related to the Research Methodology.
a2 . Establish the main issues in the technology used in the field of the course.
a3 . Express the basic principles in the development of the course.
a4 . Identify research principles and different methods in the related field of the Mechatronics.
b1 - Explore suitable methodologies and technologies in the analysis of Research Methodology pattern,
b2- Propose the analysis in the area of the Research Methodology Course.
b3- Analyze different systems to meet the required course.
c1- Perform detailed research in the area of the related course.
c2- Implement advanced methodologies and skills in the related course**.**
c3 - Conduct the acquired knowledge in the analysis of the new approaches related to the course.
d1- Examine a complete work and different tasks related to the course.
d2- Evaluate the awareness of the ethical principles and utilized knowledge int the related course.
d3- Review the advance knowledge in the related course.
d4- Estimate the learning ability and skills in the related course.

V. Course Content:

1. Theoretical Aspect:

Order	Topic List / Units	Sub -Topics List	Week Due	Contact Hours
1.	The Literature Review.	▪ Needs of the Literature Review. ▪ Objectives and Sources of Literature Review. ▪ How to conduct the Literature Review?	W1-W2	6
		▪ Reporting the Literature Review.		
2.	Introduction to	▪ Definitions and Meaning of Research.	W3-W4	6

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	the Research Methodology.	▪ Objectives of Research. ▪ General Introduction to the Course. ▪ General Characteristics of the Research. ▪ Criteria of the Good Research. ▪ Scientific Thinking.		
3.	The Research Approach.	▪ The Philosophical Background. ▪ The Qualitative Approach. ▪ The Quantitative Approach. ▪ Criteria for selecting a Research Approach.	W5-W6	6
4.	The Research Strategy.	▪ What are the Research Strategies? ▪ Case Studies. ▪ Ground Theory. ▪ Action Research.	W7	3
5.	Data Collection Methods.	▪ Questionnaire. ▪ Design a template for the Questionnaire. ▪ Interviews. ▪ Focus Groups. ▪ Observations. ▪ Case Study.	W8	3
6.	Mid-Term Exam.	▪ All the Previous Chapters.	W9	3
7.	Sampling.	▪ Definition of the Sampling. ▪ Functions of Populations and Sampling. ▪ Methods of Sampling. ▪ Characteristics of a Good Sample. ▪ The Sample Cycle.	W10-W11	6
8.	The Research Hypothesis.	▪ Meaning of the Hypothesis. ▪ Importance of the Hypothesis. ▪ Kinds of the Hypothesis. ▪ Characteristics of the Good Hypothesis. ▪ Variables in the Hypothesis. ▪ Formulating the Hypothesis. ▪ Testing the hypothesis. ▪	W12-W13	6
9.	Developing Research Proposal.	▪ What is a Research Proposal? ▪ Components of the Research Proposal. ▪ Google Search.	W14-W15	6

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		▪ Types of Journals. ▪ Journal Impact Factor. ▪ Journal Paper and Evaluation.		
10.	Final Exam.	▪ All the Chapters.	W16	3
Number of Weeks /and Contact Hours Per Semester			**16**	**48**

2. Practical Aspect (None)

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
Number of Weeks /and Contact Hours Per Semester				

3.Training/ Tutorials/ Exercises Aspects:

No.	Tutorial	Week Due	Contact Hours
1.	Assignment of the Chapter One (The Literature Review).	2	6
2.	Assignment of the Chapter Two (Introduction to the Research Methodology).	2	6
3.	Assignment of the Chapter Three (The Research Approach).	2	6
4.	Assignment of the Chapter Four (The Research Strategy).	1	3
5.	Assignment of the Chapter Five (Data Collection Methods).	1	3
6.	Assignment of the Chapter Six (Sampling).	2	6
7.	Assignment of the Chapter Seven (The Research Hypothesis).	2	6
8.	Assignment of the Chapter Eight (Developing Research Proposal).	2	6
		14	42

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VI. Teaching Strategies:

1. Active Lectures.
2. Seminar.
3. Self-learning Problems.
4. Computer hands-on Sessions.
5. Analysis and Problem Solving.
6. Brain Storming.
7. Presentation.
8. Simulation Exercises.
9. Publish Research Papers.

VII. Assessment Methods of the Course:

1. Reports.
2. Assignments.
3. Survey.
4. Written Research Proposal.
5. Thesis and Publications.
6. Presentation
7.

VIII. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due
1.	Homework (every week).	Groups	10	Every Week
2.	Mini/Major Project.	Groups	10	After the Eight Week
3.	Case Studies.	Groups	10	Last Week
	Total Score		**30**	==

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IX. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1.	**Tasks and Assignments.**	Every Week	15	15
2.	**Quizzes.**	Two Times	15	15
3.	**Mid-term Exam.**	9 th	20	20
4.	**Final Exam (Practical).**	16 th	50	50
Total			**100**	**100%**

X. Learning Resources :

1. Required Textbook(s) :

1. Deb. D,. Dey, R. & Balas, V. E. (2019), Engineering Research Methodology, (Vol. 15) Springer,
2. Denscombes, M. (2010), The Good Research Guide. Open University Press.
3. Hayhoe, G.F. & Brewer, P. E. (2021). A research primer for technical communications methods. Routledge, Taylor & Francis Group.

3. Essential References:

1. Dawson, C. (2007), A practical guide to research methods: a user friendly manual for mastering research techniques and projects.

3. Electronic Materials and Web Sites *etc.*

1. https://endnote.com
2. https://www.turnitin.com

XI الضوابط والسياسات المتبعة في المقرر Course Policies

بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:

سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز	1

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	الغياب 25% ويتم اقرار الحرمان من مجلس القسم.
2	**الحضور المتأخر Tardy:** - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.
3	**ضوابط الامتحان Exam Attendance/Punctuality:** - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.
4	**التعيينات والمشاريع Assignments & Projects:** - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.
5	**الغش Cheating:** - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	**الانتحال Plagiarism:** - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	**سياسات أخرى Other policies:** - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

2- Course Specification Advanced Project Management (2): (Quality, Resource & Communications Management)

I. Course Identification and General Information					
1	Course Title:	**Advanced Project Management (2): (Quality, Resource & Communications Management)**			
2	Course Code & Number:	CE591			
3	Credit hours:	Credit Hours (CH)			Credit Hours
		Lecture	Laboratory	Seminars	
		4			4
4	Study semester at which this course is offered:	First Semester			
5	Pre –requisite (if any):	-			
6	Co –requisite (if any):	None			
7	Program (s) in which the course is offered:	MSc. in Engineering Project Management			
8	Language of teaching the course:	English			
9	Course type	Compulsory			
10	Location of teaching the course:	Faculty of Engineering, Master programs class rooms			
11	Prepared By:	Prof. Dr. Eng. Wael A. Alaghbari			
12	Date of Approval				

II. Course Description:

This course builds to cover the second section of The Project Management Body of Knowledge (PMBOK). This course is introducing coverage of advanced topics in project quality, resource, and communications management, as well as providing comprehensive knowledge of scheduling and other PM tools. It also introduces the topic of delivering complex projects. It draws topics from the following knowledge of project management:

- Project Quality Management : the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.

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- Project Resource Management : the processes that organize, manage, and lead the project team. Resource management is the efficient and effective development of an organization's resources when they are needed. Such resources may include the financial resources, inventory, human skills, production resources, or information technology (IT) and natural resources.
- Project Communications Management : the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information.

III.	Course Intended Learning Outcomes (CILOs)	Referenced PILOs	I, E, A
a1	Provide the graduate students with holistic understanding of the principle components and concepts of project management.	A1	
a2	Demonstrate knowledge and understanding of the core quality processes and explain the role of each process in planning and managing projects.	A2	
a3	Distinguish between formal and informal communications methods and defend when each is applicable on a project.	A4	
b1	Manage, planning and execute the tough processes and usage of necessary tools in any project and effectively address the challenges faced during the project.	B1	
b2	Identify necessary human and material resources, including contracted resources, and estimate them that are required to meet stakeholder expectations.	B2	
c1	Apply appropriate quality-control tools and techniques to a given scenario where improvement is warranted as a result of the project's quality-control data.	C1	
c2	Evaluate and select appropriate communication tools and methods to communicate with identified stakeholders, including commonly used templates for communication activities such as status reporting, issues tracking, change control, and project reviews.	C2	
c3	Evaluate and select commonly accepted methods for project managers to acquire, develop, and manage resources that are appropriate in a specific project context and consistent with established policies.	C3	
d1	Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.	D1	

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Program Specification

(A) Alignment of Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	Provide the graduate students with holistic understanding of the principle components and concepts of project management.	• Lectures • Discussions	Assignments, Quizzes, Exams
a2	Demonstrate knowledge and understanding of the core quality processes and explain the role of each process in planning and managing projects.		
a3	Distinguish between formal and informal communications methods and defend when each is applicable on a project.		

(B) Alignment of Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Manage, planning and execute the tough processes and usage of necessary tools in any project and effectively address the challenges faced during the project.	• Lectures • Interactive Sessions (Brainstorming Sessions, Discussions, etc.) • Team Working Sessions • Active Learning Approaches	Assignments, Presentations, Quizzes, Exams
b2	Identify necessary human and material resources, including contracted resources, and estimate them that are required to meet stakeholder expectations.		

(C) Alignment of Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	Apply appropriate quality-control tools and techniques to a given scenario where improvement is warranted as a result of	• Interactive Sessions (Brainstorming Sessions,	Assignments, Presentations, Quizzes,

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	the project's quality-control data.	Discussions, etc.) • Team Working Sessions • Active Learning Approaches • Lectures	Exams
c2	Evaluate and select appropriate communication tools and methods to communicate with identified stakeholders, including commonly used templates for communication activities such as status reporting, issues tracking, change control, and project reviews.		
c3	Evaluate and select commonly accepted methods for project managers to acquire, develop, and manage resources that are appropriate in a specific project context and consistent with established policies.		

(D) Alignment of Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1	Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.	• Interactive Sessions (Brainstorming Sessions, Discussions, etc.) • Team Working Sessions • Active Learning Approaches	Assignments, Presentations, Quizzes, Exams

IV. Course Content

A – Lecture Aspects

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact Hours
1.	**Introduction**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	• Definition of the course plan • Definition of the course topics: - Project Quality Management - Project Resources Management	1	4

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			- Project Communications Management		
2.	**1- Project Quality Management:** **a) Plan Quality Management**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	a) Plan Quality Management: - Plan Quality Management: Inputs - Plan Quality Management: Tools and Techniques - Plan Quality Management: Outputs	1	4
3.	**b) Manage Quality**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	b) Manage Quality: - Manage Quality: Inputs - Manage Quality: Tools and Techniques - Manage Quality: Outputs	1	4
4.	**c) Control Quality**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	c) Control Quality: - Control Quality: Inputs - Control Quality: Tools and Techniques - Control Quality: Outputs	1	4
5.	**2- Project Resources Management** **a) Plan Resource Management**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	a) Plan Resource Management: - Plan Resource Management: Inputs - Plan Resource Management: Tools and Techniques - Plan Resource Management: Outputs	1	4
6.	**b) Estimate Activity Resources:**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	b) Estimate Activity Resources: - Estimate Activity Resources: Inputs - Estimate Activity Resources: Tools and Techniques - Estimate Activity Resources: Outputs	1	4
7.	**c) Acquire Resources:**	a1, a2, a3, b1,	c) Acquire Resources: - Acquire Resources: Inputs	1	4

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		b2, c1, c2, c3, d1,	- Acquire Resources: Tools and Techniques - Acquire Resources: Outputs		
8.	**Midterm Exam**			1	4
9.	**Project Resources Management (continued):** **d) Develop Team**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	d) Develop Team - Develop Team: Inputs - Develop Team: Tools and Techniques - Develop Team: Outputs	1	4
10.	**e) Manage Team**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	e) Manage Team - Manage Team: Inputs - Manage Team: Tools and Techniques - Manage Team: Outputs	1	4
11.	**f) Control Resources**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	f) Control Resources - Control Resources: Inputs - Control Resources: Tools and Techniques - Control Resources: Outputs	1	4
12.	**Project Communications Management:** **a) Plan Communications Management:**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	a) Plan Communications Management: - Plan Communications Management: Inputs - Plan Communications Management: Tools and Techniques - Plan Communications Management: Outputs	1	4
13.	**b) Manage Communications:**	a1, a2, a3, b1, b2, c1, c2, c3, d1,	b) Manage Communications: - Manage Communications: Inputs - Manage Communications: Tools and Techniques - Manage Communications: Outputs	1	4
14.	**c) Monitor Communications**	a1, a2, a3, b1, b2, c1,	c) Monitor Communications - Monitor Communications: Inputs	1	4

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		c2, c3, d1,	- Monitor Communications: Tools and Techniques - Monitor Communications: Outputs		
15.	**Revision Week**			1	4
16.	**Final Exam**			1	4
Number of Weeks /and Units Per Semester				**16**	**64**

B – Seminar **NA**

Order	Tasks	Number of Weeks	Contact Hours	Learning Outcomes
Number of Weeks /and Units Per Semester				

V. Teaching Strategies of the Course

- Lectures
- Interactive Sessions (Brainstorming Sessions, Discussions, etc.)
- Team Working Sessions
- Active Learning Approaches (Searching, case studies, ...)

V. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments and Quizzes	3 - 14	30	30%	a1, a2, a3, b1, b2, c1, c2, c3, d1,
2	Mid-Term Exam	8	20	20%	
3	Final Exam	16	50	50%	
Total			100	100%	

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VI. Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1	• Readings: Each week readings will be available on Program Website. Based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions.	a1, a2, a3, b1, b2, c1, c2, c3, d1,	3 - 14	20

VII. Report	Included Above			
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1				
2				
3				
4				
5				
6				

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Program Specification

VIII Learning Resources and Facilities
1- Required Textbook(s)
• PMI (2017). A Guide to the Project Management Body of Knowledge - PMBOK: (6th ed.). Project Management Institute, Newtown Square, PA, USA
2- Essential References
• Heerkens, G.R. (2002). Project Management. The McGraw-Hill Companies, Inc., NY: USA • Kenneth, R. (2005). Project Quality Management: Why, What and How. J. Ross Publishing, Inc., USA. • Juran, J.M. and Godfrey, A.B. (1998). Juran's Quality Control Handbook - 5th Edition. The McGraw-Hill Companies, Inc., NY: USA. • Verzuh, E. (2003). The Portable MBA in Project Management, John Wiley & Sons, Inc., Hoboken, NJ: USA.
3- Electronic Materials and Websites *etc*.
• Course Power Point. • Video clips. • Links to information resources.
Educational and research Facilities and Equipment Required
Technology Resources **(AV, data show, Smart Board, software, etc.)**
Other Resources **(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)**

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I. Course Policies

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Engineering apply. For the policy, see: ----------

1	• **Class Attendance** A student should attend not less than 75 % of total hours of the course; otherwise, he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic.
2	• **Tardy** For being late in attending the class, the student will be initially notified. If he/she repeated lateness in attending class he will be considered as absent.
3	• **Exam Attendance/Punctuality** A student should attend the exam on time. He is permitted to attend an exam half an hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	• **Assignments and Projects** Assignments are given to the students after each chapter; students have to submit all assignments for checking on time.
5	• **Cheating** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study, the student will be dismissed from the Faculty.
6	• **Plagiarism** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be dismissed from the Faculty. The final dismissal of the student from the Faculty should be confirmed by the Student Council Affairs of the university.
7	• **Other policies** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room**.** - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments may be given directly to students using soft and/or hard copy**.**

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VI.Course Plan (Syllabus)

VII.Advanced Project Management (2): (Quality, Resource & Communications Management)

II. - Information about Faculty Member Responsible for the Course							
Name of Faculty Member	Prof. Dr. Eng. Wael Alaghbari	Office Hours					
Location& Telephone No.	Faculty of Engineering Mobile: 777869168	SAT	SUN	MON	TUE	WED	THU
E-mail	wael.aghbari@gmail.com		08:00 -1:00				

III. Course Identification and General Information						
1-	Course Title:	**Advanced Project Management (2): (Quality, Resource & Communications Management)**				
2-	Course Number & Code:	CE591				
3-	Credit hours:	C.H				Total
		Th.	Seminar	Pr.	F. Tr.	
		4	-	-	-	4
4-	Study level/year at which this course is offered:	First Semester				
5-	Pre –requisite:	-				
6-	Co –requisite (if any):	None				
7-	Program (s) in which the course is offered	MSc. in Engineering Project Management				
8-	Language of teaching the course:	English				
9-	Course type	Compulsory				
10-	Location of teaching the course:	Faculty of Engineering, Master programs class rooms				

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IV. Course Description

This course builds to cover the second section of The Project Management Body of Knowledge (PMBOK). This course is introducing coverage of advanced topics in project quality, resource, and communications management, as well as providing comprehensive knowledge of scheduling and other PM tools. It also introduces the topic of delivering complex projects. It draws topics from the following knowledge of project management:

- Project Quality Management : the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.
- Project Resource Management : the processes that organize, manage, and lead the project team. Resource management is the efficient and effective development of an organization's resources when they are needed. Such resources may include the financial resources, inventory, human skills, production resources, or information technology (IT) and natural resources.
- Project Communications Management : the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information.

V. Intended Learning Outcomes (ILOs) of the Course

- Provide the graduate students with holistic understanding of the principle components and concepts of project management.
- Demonstrate knowledge and understanding of the core quality processes and explain the role of each process in planning and managing projects.
- Distinguish between formal and informal communications methods and defend when each is applicable on a project.
- Manage, planning and execute the tough processes and usage of necessary tools in any project and effectively address the challenges faced during the project.
- Identify necessary human and material resources, including contracted resources, and estimate them that are required to meet stakeholder expectations.
- Apply appropriate quality-control tools and techniques to a given scenario where improvement is warranted as a result of the project's quality-control data.
- Evaluate and select appropriate communication tools and methods to communicate with identified stakeholders, including commonly used templates for communication activities such as status reporting, issues tracking, change control, and project reviews.
- Evaluate and select commonly accepted methods for project managers to acquire, develop, and manage resources that are appropriate in a specific project context and consistent with established policies.
- Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.

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VI.Course Contents			
A – Theoretical Aspects			
Order	Topics List	Week Due	Contact Hours
1	Introduction	Week 1	4
2	1- Project Quality Management: a) Plan Quality Management	Week 2	4
3	1- Project Quality Management: b) Manage Quality	Week 3	4
4	1- Project Quality Management: c) Control Quality	Week 4	4
5	2- Project Resources Management: a) Plan Resource Management	Week 5	4
6	2- Project Resources Management: b) Estimate Activity Resources	Week 6	4
7	2- Project Resources Management: c) Acquire Resources	Week 7	4
8	Midterm Exam	Week 8	4
9	2- Project Resources Management: d) Develop Team	Week 9	4
10	2- Project Resources Management: e) Manage Team	Week 10	4
11	2- Project Resources Management: f) Control Resources	Week 11	4
12	3- Project Communications Management: a) Plan Communications Management	Week 12	4
13	3- Project Communications Management: b) Manage Communications	Week 13	4
14	3- Project Communications Management: c) Monitor Communications	Week 14	4
15	Revision Week	Week 15	4
16	Final Exam	Week 16	4
Number of Weeks and Units Per Semester		**16**	**64**

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B – Seminar NA				
Order	**Tasks/ Experiments**	**Number of Weeks**	**Contact Hours**	**Learning Outcomes**
1.				
2.				
3.				
Number of Weeks /and Units Per Semester				

VII. Teaching Strategies of the Course

- Lectures
- Interactive Sessions (Brainstorming Sessions, Discussions, etc.)
- Team Working Sessions
- Active Learning Approaches (Searching, case studies, ...)

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1.	Assignments	3 - 14	20	20%
2.	Mid-Term Exam	8	20	20%
2.	Final Exam	16	60	60%
Total			100	100%

VIII. Learning Resources

1- Required Textbook(s)

- PMI (2017). A Guide to the Project Management Body of Knowledge - PMBOK: (6th ed.). Project Management Institute, Newtown Square, PA, USA
-

2- Essential References

- Heerkens, G.R. (2002). Project Management. The McGraw-Hill Companies, Inc., NY: USA
- Kenneth, R. (2005). Project Quality Management: Why, What and How. J. Ross Publishing, Inc., USA.

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- Juran, J.M. and Godfrey, A.B. (1998). Juran's Quality Control Handbook - 5th Edition. The McGraw-Hill Companies, Inc., NY: USA.
- Verzuh, E. (2003). The Portable MBA in Project Management, John Wiley & Sons, Inc., Hoboken, NJ: USA.

3- Electronic Materials and Web Sites *etc*.

- Course Power Point.
- Video clips.
- Links to information resources.

IX. Course Policies

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Engineering apply. For the policy, see: ----------

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4	• **Assignments and Projects** Assignments are given to the students after each chapter; students have to submit all assignments for checking on time.
5	• **Cheating** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study, the student will be dismissed from the Faculty.
6	• **Plagiarism** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be dismissed from the Faculty. The final dismissal of the student from the Faculty should be confirmed by the Student Council Affairs of the university.

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Program Specification

7	• **Other policies** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room**.** - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments may be given directly to students using soft and/or hard copy**.**

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3- Course Specification Advanced Project Management (3): (Risk, Procurement & Stakeholders Management)

II. Course Identification and General Information						
1	Course Title:	**Advanced Project Management (3): (Risk, Procurement & Stakeholders Management)**				
2	Course Code & Number:	CE592				
3	Credit hours:	Credit Hours (CH)			Credit Hours	
		Lecture	Laboratory	Seminars		
		4	-	-	4	
4	Study semester at which this course is offered:	Second Semester				
5	Pre –requisite (if any):	-				
6	Co –requisite (if any):	None				
7	Program (s) in which the course is offered:	MSc. in Engineering Project Management				
8	Language of teaching the course:	English				
9	Course type	Compulsory				
10	Location of teaching the course:	Faculty of Engineering, Master programs class rooms				
11	Prepared By:	Prof. Dr. Eng. Wael A. Alaghbari				
12	Date of Approval					

IX. Course Description:

This course builds to cover the third section of The Project Management Body of Knowledge (PMBOK). This course is introducing coverage of advanced topics in project risk and procurement management, and project stakeholder engagement, as well as providing comprehensive knowledge of scheduling and other PM tools. It also introduces the topic of delivering complex projects. It draws topics from the following knowledge of project management:

1. Project Risk Management : the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project.

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2. Project Procurement Management: the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Processes in this area include Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout.
3. Project Stakeholder Management: the processes required to identify all people or organizations impacted by the project, analyzing stakeholder expectations and impact on the project, and developing appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

X. Course Intended Learning Outcomes (CILOs)		Referenced PILOs	I, E, A
a1	Provide the graduate students with holistic understanding of the principal components and concepts of project management.	A1	
a2	Demonstrate knowledge and understanding planning, classification of the project risks and construct a prioritized risk register with a risk-response plan.	A2	
b1	Managing, planning, evaluating risks and opportunities and execute the tough processes, and using necessary tools and effectively address the challenges faced during the project.	B1	
b2	Analyze the nature of stakeholder groups and summarize their impact on project performance. Also, create a stakeholder engagement plan that includes approaches to issues such as communication, ethics, and leadership.	B2	
c1	Construct a procurement management plan that reflects the project's procurement needs.	C1	
c2	Determine, analyze and evaluate different types of contracts and monitoring of the risks associated with each type of contract-procurement.	C2	
d1	Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.	D1	

(A) Alignment of Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a.1	Provide the graduate students with holistic understanding of the principle components and concepts of project management.	Lectures, Demonstrations, Interactive class discussion	Multiple choice tests, Assignments, Presentations, Quizzes,

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a.2	Demonstrate knowledge and understanding planning, classification of the project risks and construct a prioritized risk register with a risk-response plan.		Exams

(B) Alignment of Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b.1	Managing, planning, evaluating risks and opportunities and execute the tough processes, and using necessary tools and effectively address the challenges faced during the project.	Lectures, Demonstrations, Interactive class discussions	Assignments, Oral Presentations, Quizzes, Exams
b.2	Analyze the nature of stakeholder groups and summarize their impact on project performance. Also, create a stakeholder engagement plan that includes approaches to issues such as communication, ethics, and leadership.		

(C) Alignment of Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c.1	Construct a procurement management plan that reflects the project's procurement needs.	Lectures, Demonstrations, Interactive class discussions	Assignments, Oral Presentations, Quizzes, Exams
c.2	Determine, analyze and evaluate different types of contracts and monitoring of the risks associated with each type of contract-procurement.		

(D) Alignment of Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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d.1	Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.	Lectures, Demonstrations, Interactive class discussions	Assignments, Oral Presentations, Quizzes

XI. Course Content

A – Lecture Aspects

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact Hours
1.	**Introduction**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	• Definition of the course plan • Definition of the course topics: - Project Risk Management - Project Procurement Management - Project Stakeholders Management	1	4
2.	**11- Project Risk Management:** **1) Plan Risk Management**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	d) Plan Risk Management: - Inputs - Tools and Techniques - Outputs	1	2
	2) Identify Risk	a.1, a.2, b.1, b.2, c.1, c.2, d.1	e) Identify Risk: - Inputs - Tools and Techniques - Outputs		2
3.	**3) Perform Qualitative Risk Analysis**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	f) Perform Qualitative Risk Analysis: - Inputs - Tools and Techniques - Outputs	1	2
	4) Perform Quantitative Risk Analysis	a.1, a.2, b.1, b.2, c.1, c.2,	g) Perform Quantitative Risk Analysis:		2

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		d.1	- Inputs - Tools and Techniques - Outputs		
4.	**5) Plan Risk Responses**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	h) Plan Risk Responses: - Inputs - Tools and Techniques - Outputs	1	2
	6) Implement Risk Responses	a.1, a.2, b.1, b.2, c.1, c.2, d.1	i) Implement Risk Responses: - Inputs - Tools and Techniques - Outputs		2
5.	**7) Monitor Risks**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	j) Monitor Risks: - Inputs - Tools and Techniques - Outputs	1	2
	Class Work: - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes		2
6.	**Class Work:** - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes	1	4
7.	**Midterm Exam**			1	4
8.	**12- Project Procurement Management:** **1) Plan Procurement Management**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	1) Plan Procurement Management: - Inputs - Tools and Techniques - Outputs	1	2
	2) Conduct Procurements	a.1, a.2, b.1, b.2, c.1, c.2, d.1	2) Conduct Procurements - Inputs - Tools and Techniques		2

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			- Outputs		
9.	**3) Control Procurements**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	3) Control Procurements: - Inputs - Tools and Techniques - Outputs	1	2
	Class Work: - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes		2
10.	**Class Work:** - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes	1	4
11.	**13- Project Stakeholders Management:** **1) Identify Stakeholders:**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	1) Identify Stakeholders: - Inputs - Tools and Techniques - Outputs	1	2
	2) Plan Stakeholder Engagement	a.1, a.2, b.1, b.2, c.1, c.2, d.1	2) Plan Stakeholder Engagement: - Inputs - Tools and Techniques - Outputs		2
12.	**3) Manage Stakeholder Engagement**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	3) Manage Stakeholder Engagement: - Inputs - Tools and Techniques - Outputs	1	2
	4) Monitor Stakeholder	a.1, a.2, b.1, b.2, c.1, c.2, d.1	4) Monitor Stakeholder: - Inputs - Tools and Techniques - Outputs		2

13.	**Class Work:** - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes	1	4
14.	**Class Work:** - **Presentations** - **Group Discussions** - **Quiz**	a.1, a.2, b.1, b.2, c.1, c.2, d.1	Each student will take 15-20 minutes	1	4
15.	**General Revision**			1	4
16.	**Final Exam**			1	4
Number of Weeks /and Units Per Semester				**16**	**64**

B - Seminar **NA**

Order	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes
1.				
2.				
Number of Weeks /and Units Per Semester				

XII. Teaching Strategies of the Course

- Lectures
- Interactive Sessions (Brainstorming Sessions, Discussions, etc.)
- Team Working Sessions
- Active Learning Approaches (Searching, case studies, ...)

VIII. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments and Quizzes	3 - 14	30	30	a.1, a.2, b.1, b.2, c.1, c.2, d.2
2	Mid-Term Exam	7 - 9	20	20	
3	Final Exam	16	50	50	
Total			100	100%	

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IX. Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1	• Readings: Each week readings; based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions.		3 - 14	20

VIII Learning Resources and Facilities
1- Required Textbook(s)
• PMI (2017). A Guide to the Project Management Body of Knowledge - PMBOK: (6th ed.). Project Management Institute, Newtown Square, PA, USA
2- Essential References
• Heerkens, G.R. (2002). Project Management. The McGraw-Hill Companies, Inc., NY: USA • Verzuh, E. (2003). The Portable MBA in Project Management, John Wiley & Sons, Inc., Hoboken, NJ: USA.
3- Electronic Materials and Websites *etc.*
• Course Power Point. • Video clips. • Links to information resources.
Educational and research Facilities and Equipment Required
Technology Resources **(AV, data show, Smart Board, software, etc.)**
Datashow, Whiteboard, Software
Other Resources **(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)**

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Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			

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X. Course Policies	
Unless otherwise stated, the normal course administration policies and rules of the Faculty of Engineering apply. For the policy, see: ----------	
1	• **Class Attendance** A student should attend not less than 75 % of total hours of the course; otherwise, he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university clinic.
2	• **Tardy** For being late in attending the class, the student will be initially notified. If he/she repeated lateness in attending class he will be considered as absent.
3	• **Exam Attendance/Punctuality** A student should attend the exam on time. He is permitted to attend an exam half an hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	• **Assignments and Projects** Assignments are given to the students after each chapter; students have to submit all assignments for checking on time.
5	• **Cheating** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study, the student will be dismissed from the faculty.
6	• **Plagiarism** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be dismissed from the faculty. The final dismissal of the student from the faculty should be confirmed by the Student Council Affairs of the university.
7	• **Other policies** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room**.** - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments may be given directly to students using soft and/or hard copy**.**

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4- Course Plan (Syllabus) Advanced Project Management (3): (Risk, Procurement & Stakeholders Management)

I. - Information about Faculty Member Responsible for the Course								
Name of Faculty Member	Prof. Dr. Eng. Wael A. Alaghbari	Office Hours						
Location& Telephone No.	Faculty of Engineering Mobile: 777869168	SAT	SUN	MON	TUE	WED	THU	
E-mail	wael.aghbari@gmail.com							

II. Course Identification and General Information						
1	Course Title:	**Advanced Project Management (3): (Risk, Procurement & Stakeholders Management)**				
2-	Course Number & Code:	CE592				
3-	Credit hours:	C.H				Total
		Th.	Seminar	Pr.	F. Tr.	
		4	-	-	-	4
4-	Study level/year at which this course is offered:	MSc. in Engineering Project Management				
5-	Pre –requisite:	-				
6-	Co –requisite (if any):	None				
7-	Program (s) in which the course is offered	MSc. in Engineering Project Management				
8-	Language of teaching the course:	English				
9-	System of Study:	Regular				
10-	Mode of delivery:	Face-to-Face				
11-	Location of teaching the course:	Faculty of Engineering				

III. Course Description
This course builds to cover the third section of The Project Management Body of Knowledge (PMBOK). This course is introducing coverage of advanced topics in project risk and procurement management, and project stakeholder engagement, as well as providing comprehensive knowledge

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of scheduling and other PM tools. It also introduces the topic of delivering complex projects. It draws topics from the following knowledge of project management:

1. Project Risk Management : the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project.
2. Project Procurement Management: the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Processes in this area include Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout.
3. Project Stakeholder Management: the processes required to identify all people or organizations impacted by the project, analyzing stakeholder expectations and impact on the project, and developing appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

IV. Intended Learning Outcomes (ILOs) of the Course

- Provide the graduate students with holistic understanding of the principal components and concepts of project management.
- Demonstrate knowledge and understanding planning, classification of the project risks and construct a prioritized risk register with a risk-response plan.
- Managing, planning, evaluating risks and opportunities and execute the tough processes, and using necessary tools and effectively address the challenges faced during the project.
- Analyze the nature of stakeholder groups and summarize their impact on project performance. Also, create a stakeholder engagement plan that includes approaches to issues such as communication, ethics, and leadership.
- Construct a procurement management plan that reflects the project's procurement needs.
- Determine, analyze and evaluate different types of contracts and monitoring of the risks associated with each type of contract-procurement.
- Write and explain technical reports, in addition to solving problems in the project and presenting them orally and in writing to persuade stakeholders.

V. Course Contents

A – Theoretical Aspects

Order	Topics List	Week Due	Contact Hours
1.	Introduction	1 week	4

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V. Course Contents			
A – Theoretical Aspects			
2.	11- Project Risk Management: 1) Plan Risk Management 2) Identify Risk 3) Perform Qualitative Risk Analysis 4) Perform Quantitative Risk Analysis 5) Plan Risk Responses 6) Implement Risk Responses 7) Monitor Risks	3.5 weeks	14
3.	Class Work: - Presentations - Group Discussions - Quiz	1.5 week	6
4.	Midterm Exam	1 week	4
5.	12- Project Procurement Management: 1) Plan Procurement Management 2) Conduct Procurements 3) Control Procurements	1.5 week	6
6.	Class Work: - Presentations - Group Discussions - Quiz	1.5 week	6
7.	13- Project Stakeholders Management: 1) Identify Stakeholders: 2) Plan Stakeholder Engagement 3) Manage Stakeholder Engagement 4) Monitor Stakeholder	2 weeks	8
8.	Class Work: - Presentations - Group Discussions - Quiz	2 weeks	8
9.	General Revision	1 week	4
10.	Final Exam	1 week	4
Number of Weeks and Units Per Semester		**16**	**64**

B – Seminar	**NA**			
Order	**Tasks/ Experiments**	**Number of Weeks**	**Contact Hours**	**Learning Outcomes**
1.				

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IX. Course Policies

2.				
3.				
Number of Weeks /and Units Per Semester				

VI. Teaching Strategies of the Course

- Lectures
- Interactive Sessions (Brainstorming Sessions, Discussions, etc.)
- Team Working Sessions
- Active Learning Approaches (Searching, case studies, ...)

VII. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1.	Assignments and Quizzes	3 - 14	30	30%	a.1, a.2, b.1, b.2, c.1, c.2, d.1
2.	Mid-Term Exam	8	20	20%	
3.	Final Exam	16	50	50%	
Total			100	100%	

VIII. Learning Resources

1- Required Textbooks

- PMI (2017). A Guide to the Project Management Body of Knowledge - PMBOK: (6th ed.). Project Management Institute, Newtown Square, PA, USA

2- Essential References

- Heerkens, G.R. (2002). Project Management. The McGraw-Hill Companies, Inc., NY: USA
- Verzuh, E. (2003). The Portable MBA in Project Management, John Wiley & Sons, Inc., Hoboken, NJ: USA.

3- Electronic Materials and Web Sites *etc*.

- Course Power Point.
- Video clips.
- Links to information resources.

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Program Specification

Unless otherwise stated, the normal course administration policies and rules of the Faculty of Engineering apply. For the policy, see: ----------	
1	• **Class Attendance** A student should attend not less than 75 % of total hours of the course; otherwise, he will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic.
2	• **Tardy** For being late in attending the class, the student will be initially notified. If he/she repeated lateness in attending class he will be considered as absent.
3	• **Exam Attendance/Punctuality** A student should attend the exam on time. He is permitted to attend an exam half an hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4	• **Assignments and Projects** Assignments are given to the students after each chapter; students have to submit all assignments for checking on time.
5	• **Cheating** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study, the student will be dismissed from the faculty.
6	• **Plagiarism** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he will be dismissed from the faculty. The final dismissal of the student from the faculty should be confirmed by the Student Council Affairs of the university.
7	• **Other policies** - Mobile phones are not allowed to use during a class lecture. It must be closed, otherwise the student will be asked to leave the lecture room**.** - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments may be given directly to students using soft and/or hard copy**.**

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5- Course Specification of: Project Monitoring and Controlling

Course Code (CE593)

XII. General Information About the Course:						
13.	**Course Title:**	Project Monitoring and Controlling				
14.	**Course Code and Number:**	CE593				
15.	**Credit Hours:**	**Credit Hours**			**Total**	
		Lecture	Practical	Seminar/Tutorial		
		4	-	-	4	
16.	**Study Level and Semester:**	Second Semester				
17.	**Pre-requisites (if any):**	-				
18.	**Co-requisites (if any):**	-				
19.	**Program (s) in which the course is offered:**	MSc. in Engineering Project Management				
20.	**Language of teaching the course:**	English and Arabic				
21.	**Study System:**	Courses & Thesis				
22.	**Prepared By:**	Dr. Tarek Abdullah Barakat				
23.	**Reviewed by:**	Prof. Dr. Omar Hassan Al-Sakaf				
24.	**Date of Approval:**					

XIII. Course Description:

This course covers advanced topics in project monitoring and controlling across knowledge areas in accordance with the Project Management Body of Knowledge (PMBOK). The course provides the tools and techniques to monitor, evaluate and control the project. This is essential for project management team members as they are responsible for the successful implementation of the project to achieve its goals. Students will learn about the various elements, processes, and concepts to evaluate the project status, monitor project progress, and learn how to respond to variances and changes on projects.

XIV. Course Intended Learning Outcomes (CILOs):

Upon successful completion of the **Project Monitoring and Controlling** Course, the graduates will be able to:

a1 - Understand the overall processes of monitoring and controlling projects within every knowledge area including integration, time, scope and cost management.

a2 - Understand the principles, concepts, and tools used in project management for monitoring

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and controlling projects.

b1 - Analyze the collected project data during implementation to compare with the project management plan.

b2 - Assess and evaluate variances and changes evident from the collected project data relative to the project management plan to compare options and arrive at feasible solutions.

c1 - Apply the principles and concepts of project monitoring and controlling in all the knowledge areas including integration, scope, time and cost management.

c2 - Prepare an integrated monitoring and controlling system and plan incorporating all knowledge areas and the various components of the project to effectively monitor and control the project.

d1 - Attain appropriate effective written and oral communication skills.

d2 - Function effectively as an individual or within diverse and multi-disciplinary teams for successful project management.

XV. Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs)

CILOs		PILOs	
e. Knowledge and Understanding: Upon successful completion of **the Project Monitoring and Controlling Course**, the graduates will be able to:		**E. Knowledge and Understanding:** Upon successful completion of the **MSc. Program in Engineering Project Management**, the graduates will be able to:	
a1.	Understand the overall processes of monitoring and controlling projects within every knowledge area including integration, time, scope and cost management.	**A1.**	Describe the various project management knowledge areas.
		A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
a2.	Understand the principles, concepts, and tools used in project management for monitoring and controlling projects.	**A3.**	Demonstrate knowledge and understanding of methodology, research planning, and analysis techniques.
f. Cognitive/ Intellectual Skills: Upon successful		**F. Cognitive/ Intellectual Skills:** Upon	

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Program Specification

completion of the **Project Monitoring and Controlling Course,** the graduates will be able to:		successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
b1.	Analyze the collected project data during implementation to compare with the project management plan.	**B1.**	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
b2.	Assess and evaluate variances and changes evident from the collected project data relative to the project management plan to compare options and arrive at feasible solutions.	**B2.**	Critically evaluate decision making techniques to aid management judgement;
g. Professional and Practical Skills: Upon successful completion of the **Project Monitoring and Controlling Course,** the graduates will be able to:		**G. Professional and Practical Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
c1.	Apply the principles and concepts of project monitoring and controlling in all the knowledge areas including integration, scope, time and cost management.	**C1.**	Apply expertly several different techniques used in the management and control of projects.
c2.	Prepare an integrated monitoring and controlling system and plan incorporating all knowledge areas and the various components of the project to effectively monitor and control the project.	**C2.**	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.
h. Transferable Skills: Upon successful completion of the **Project Monitoring and Controlling Course,** the graduates will be able to:		**H. Transferable Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
d1.	Attain appropriate effective written and oral communication skills.	**D1.**	Prepare a complete thesis and reports, present the ideas clearly and defend them.

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d2.	Function effectively as an individual or within diverse and multi-disciplinary teams for successful project management.	**D2.**	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.

XVI. Alignment of CILOs to Teaching and Assessment Strategies

e. Alignment of Knowledge and Understanding CILOs:

Knowledge and Understanding CILOs		Teaching Strategies	Assessment Strategies
a1.	Understand the overall processes of monitoring and controlling projects within every knowledge area including integration, time, scope and cost management.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussions	▪ Group work ▪ Assignments ▪ Presentations ▪ Written Exams
a2.	Understand the principles, concepts, and tools used in project management for monitoring and controlling projects.		

f. Alignment of Intellectual Skills CILOs:

Intellectual Skills CILOs		Teaching Strategies	Assessment Strategies
b1.	Analyze the collected project data during implementation to compare with the project management plan.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
b2.	Assess and evaluate variances and changes evident from the collected project data relative to the project management plan to compare options and arrive at feasible solutions.		

g. Alignment of Professional and Practical Skills CILOs:

Professional and Practical Skills CILOs		Teaching Strategies	Assessment Strategies
c1.	Apply the principles and concepts of project monitoring and controlling in all the knowledge areas including integration, scope, time and cost management.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
c2.	Prepare an integrated monitoring and controlling system and plan incorporating all knowledge areas and the various components of the project to effectively monitor and		

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	control the project.		

h. Alignment of Transferable (General) Skills CILOs:

Transferable (General) Skills CILOs		Teaching Strategies	Assessment Strategies
d1.	Attain appropriate effective written and oral communication skills.	▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations.
d2.	Function effectively as an individual or within diverse and multi-disciplinary teams for successful project management.		

XVII. Course Content

4. Theoretical Aspect

Order	Topic List / Units	Sub -Topics List	Number of Weeks	Contact Hours	Course ILOs
1	**Introduction**	• What is project monitoring, evaluation and controlling? • What is the relationship between the project management plan and the monitoring and controlling process? • Knowledge areas and relationship with project monitoring and controlling. • Overview of monitoring and controlling process and knowledge areas.	2	8	a.1, a.2, b.1, b.2
2	**Project Integration Management Context**	• Monitoring and controlling of project integration • Tools and techniques used • Discussion of case studies in communication monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2
3	**Project Scope Management**	• Monitoring and controlling of project scope	1	4	a.1, a.2, b.1, b.2, c.1, c.2,

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	Context	• Tools and techniques used • Discussion of case studies in cost monitoring and controlling			d1, d2
4	**Project Schedule Management Context**	• Importance of good planning • Monitoring and controlling of the time schedule • Tools and techniques used	1	4	a.1, a.2, b.1, b.2, c.1, c.2
5	**Project Cost Management Context**	• Monitoring and controlling of the time schedule • Tools and techniques used • Discussion of case studies in schedule monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2
6	**Project Quality Management Context**	• Monitoring and controlling of project quality • Tools and techniques used • Discussion of case studies in resource monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2
7	**Project Resource Management Context**	• Monitoring and controlling of project resources • Tools and techniques used • Discussion of case studies in scope monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2
8	Midterm Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2
9	**Project Communication Management**	• Monitoring and controlling of project communication • Tools and techniques used • Discussion of case studies in communication monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2

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10	**Project Risk management**	• Monitoring and controlling of project risk • Tools and techniques used • Discussion of case studies in risk monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d1, d2
11	**Project Procurement Management Context**	• Monitoring and controlling of project procurement • Tools and techniques used • Discussion of case studies in procurement monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2
12	**Project Stakeholder management**	• Monitoring and controlling of project stakeholders • Tools and techniques used • Discussion of case studies in stakeholder monitoring and controlling	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d1, d2
13	**Project HSE and other issues**	• Monitoring and controlling of other project elements • Tools and techniques used • Discussion of case studies in integration monitoring and controlling	2	8	a.1, a.2, b.1, b.2, c.1, c.2
14	Final Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2
Number of Weeks /and Contact Hours Per Semester			**16**	**64**	

5. Practical Aspect	**NA**			
Order	**Practical / Tutorials topics**	**Number of Weeks**	**Contact Hours**	**Course ILOs**
1				
Number of Weeks /and Contact Hours Per Semester				

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6. Tutorial Aspect: NA				
No.	**Tutorial**	**Number of Weeks**	**Contact Hours**	**Learning Outcomes (CILOs)**
1				
Number of Weeks /and Units Per Semester				

VIII. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

XIX. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

XX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due	CILOs (symbols)
1	• Group work; groups will develop an integrated plan on a project implementing the knowledge areas incorporating tools and methods taught through lectures, group discussions and reading assignments. Regular updates to the project will be made through each group's presentation. • Students are expected to prepare for class by reading the relevant assigned sections prior to the class and to participate in class sessions/group discussions.	Group	20	3-14	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2

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	Total Score	20	-	-

XXI. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	CILOs
1	Assignments	3-14	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
2	Group work	3-14	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
3	Mid-Term Exam	10	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1
4	Final Exam	16	40	40%	
Total			**100**	**100%**	-

VIII Learning Resources and Facilities

1- Required Textbook(s)

- Planning, Scheduling, Monitoring and Control: The Practical Project Management of Time, Cost and Risk, Association for Project Management, 2015
- Del Pico, W.J., Project Control: Integrating Cost and Schedule In Construction, John Wiley and Sons, Inc., 2013
- Mubarak, Saleh, Construction Project Scheduling and Control, Wiley and Sons, Inc., 3rd Ed, 2015
- Carmichael, D.G., Project Planning, and Control, Taylor and Francis, 2006

2- Essential References

- Project Management Institute. 2017. A Guide to the Project Management Body of Knowledge (**PMBOK** Guide) 6th Edition, Newton Square, Project Management Institute.
- Kerzner, Harold, 'Project management: a systems approach to planning, scheduling, and controlling', 8th Edition, John Wiley & Sons, Inc., 2003.
- Lester, Albert, 'Project Management, Planning and Control', 7th Edition, Butterworth-

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Heinemann, 2017.

- Milosvic, D.Z. et al., Case Studies In Project, Program and Organizational Project Management, John Wiley and Sons, Inc., 2010
- Kerzner, Harold, Project Management Case Studies, 5th Edition, John Wiley and Sons, Inc., 2017
- Atesman, K.M., Project Management Case Studies and Lessons Learned: Stakeholder, Scope, Knowledge, Schedule, Resource and Team Management, CRC Press, 2015

3- Electronic Materials and Websites *etc*.

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

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Program Specification

i. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4
الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.	5
الانتحال Plagiarism: - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك	6
سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ	7

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Program Specification

Academic Year: ……....

Course Plan (Syllabus): Project Monitoring and Controlling

I. Information about Faculty Member Responsible for the Course:

Name	**Dr. Tarek A. Barakat**	**Office Hours**					
Location &Telephone No.	Faculty of Engineering Mobile: 777764744	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	tahbarakat@gmail.com	**09:00 – 13:00**					

II. General Information about the Course:

10	**Course Title**	Project Monitoring and Controlling			
11	**Course Code and Number**	CE590			
12	**Credit Hours**	**Credit Hours**			**Total**
		Lecture	**Practical**	**Seminar/Tutorial**	
		4	-	-	**4**
13	**Study Level and Semester**	**First Semester**			
14	**Pre-requisites**	-			
15	**Co –requisite**	-			
16	**Program (s) in which the course is offered**	MSc. in Engineering Project Management			
17	**Language of teaching the course**	English and Arabic			
18	**Location of teaching the course**	**Faculty of Engineering**			

II. Course Description:

This course covers advanced topics in project monitoring and controlling across knowledge areas in accordance with the Project Management Body of Knowledge (PMBOK). The course provides the tools and techniques to monitor, evaluate and control the project. This is essential for project management team members as they are responsible for the successful implementation of the project to achieve its goals. Students will learn about the various elements, processes, and concepts to evaluate the project status, monitor project progress, and learn how to respond to variances and changes on projects.

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IV. Course Intended Learning Outcomes (CILOs):

Upon successful completion of the **Project Monitoring and Controlling** Course, the graduates will be able to:

a1 - Understand the overall processes of monitoring and controlling projects within every knowledge area including integration, time, scope and cost management.

a2 - Understand the principles, concepts, and tools used in project management for monitoring and controlling projects.

b1 - Analyze the collected project data during implementation to compare with the project management plan.

b2 - Assess and evaluate variances and changes evident from the collected project data relative to the project management plan to compare options and arrive at feasible solutions.

c1 - Apply the principles and concepts of project monitoring and controlling in all the knowledge areas including integration, scope, time and cost management.

c2 - Prepare an integrated monitoring and controlling system and plan incorporating all knowledge areas and the various components of the project to effectively monitor and control the project.

d1 - Attain appropriate effective written and oral communication skills.

d2 - Function effectively as an individual or within diverse and multi-disciplinary teams for successful project management.

X. Course Content

A – Theoretical Aspects

Order	Topics List	Week Due	Contact Hours
1	Introduction	Week 1-2	8
2	Project integration management context	Week 3	4
3	Project scope management context	Week 4	4
4	Project schedule management context	Week 5	4
5	Project cost management context	Week 6	4

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X. Course Content

A – Theoretical Aspects

6	Project quality management context	Week 7	4
7	Project resource management context	Week 8	4
8	Midterm Exam	Week 9	4
9	Project communication management context	Week 10	4
10	Project risk management context	Week 11	4
11	Project procurement management context	Week 12	4
12	Project stakeholder management context	Week 13	4
13	Project HSE and other issues	Week 14-15	8
14	Final Exam	Week 16	4
Number of Weeks and Units Per Semester		**16**	**48**

3. Practical Aspect NA

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
2				
Number of Weeks /and Contact Hours Per Semester				

4. Training/ Tutorials/ Exercises Aspects: NA

Order	Tutorials/ Exercises	Week Due	Contact Hours
1	▪		
2	▪		
Number of Weeks /and Contact Hours Per Semester			

XV. Teaching Strategies:

- Formal lectures

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- Interactive discussions
- Group work
    - Presentations

XVI. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due
1	• Group work; groups will develop an integrated plan on a project implementing the knowledge areas incorporating tools and methods taught through lectures, group discussions and reading assignments. Regular updates to the project will be made through each group's presentation. • Students are expected to prepare for class by reading the relevant assigned sections prior to the class and to participate in class sessions/group discussions.	Group	20	3-14
	Total Score		**20**	**-**

XI. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1	Assignments	3-14	20	20%
	Group work	3-14	20	20%
2	Mid-Term Exam	8	20	20%
3	Final Exam	16	40	40%

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Total	100	100%

VIII Learning Resources and Facilities

1- Required Textbook(s)

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- Lester, Albert, 'Project Management, Planning and Control', 7th Edition, Butterworth-Heinemann, 2017.
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- Kerzner, Harold, Project Management Case Studies, 5th Edition, John Wiley and Sons, Inc., 2017
- Atesman, K.M., Project Management Case Studies and Lessons Learned: Stakeholder, Scope, Knowledge, Schedule, Resource and Team Management, CRC Press, 2015

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

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ii. الضوابط والسياسات المتبعة في المقرر Course Policies	
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سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4
الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.	5
الانتحال Plagiarism: - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك	6
سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ	7

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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7- Course Specification of: Health, Safety and Environment Management

Couse Code (CE594)

I. General Information About the Course:						
1.	**Course Title:**	Health, Safety and Environment Management				
2.	**Course Code and Number:**	CE594				
3.	**Credit Hours:**	**Credit Hours**			**Total**	
		Lecture	Practical	Seminar/Tutorial		
		4	-	-	4	
4.	**Study Level and Semester:**	First Semester				
5.	**Pre-requisites (if any):**	-				
6.	**Co-requisites (if any):**	-				
7.	**Program (s) in which the course is offered:**	MSc. in Engineering Project Management				
8.	**Language of teaching the course:**	English and/or Arabic				
9.	**Study System:**	Courses & Thesis				
10.	**Prepared By:**	Prof. Dr. Eng. Omar H. Al-Sakaf				
11.	**Reviewed by:**	Prof. Dr. Wael Al-Aghbari				
12.	**Date of Approval:**					

II. Course Description:

This course aims to teach the science and practice of health, safety and environment HSE management in the context of a team approach. It delivers an understanding of what constitutes an HSE management system and how these systems are applied in the different engineering disciplines to integrate health, safety and environment issues in all activities of the engineering profession and throughout the project life cycle as well. On successful completion of the course, students should be in a position to identify, evaluate and provide solutions to a wide range of health, safety and environmental problems, and function well in a multi-disciplinary team. The comprehensive syllabus recognizes the importance of technical and practical skills as well as the need for good management skills and critical thinking.

III. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Health, Safety and Environment Management** Course, the graduates will be able to:

a1 - Demonstrate understanding of the health, safety and environment (HSE) legal and behavioral issues and the consequent responsibilities relevant to HSE management practices in the engineering profession.

a2 - Recognize the dynamically changing HSE practices in increasing complex disciplines of engineering and industrial setup.

b1 - Design appropriate HSE management systems to improve productivity, quality and overall performance.

b2 - Develop efficient systems for HSE management based on principles for experience feedback and learning.

c1 - Apply acquired knowledge on real cases to understand businesses' working environment organization and to master the concept HSE risk in relation to work environment and methods for evaluation.

c2 - Select methods for HSE systems analysis for a given technical system and reflect on the differences and suitability of the methods.

d1 - Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to HSE problems.

d2 - Communicate effectively on the impact of HSE solutions on productivity, quality and society at large.

IV. Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs)

CILOs		PILOs	
i. Knowledge and Understanding: Upon successful completion of **the Health, Safety and Environment Management Course**, the graduates will be able to:		**I. Knowledge and Understanding:** Upon successful completion of the **MSc. Program in Engineering Project Management**, the graduates will be able to:	
a1.	Demonstrate understanding of the health, safety and environment (HSE) legal and behavioral issues and the consequent responsibilities relevant to HSE management practices in the engineering profession.	**A1.**	Describe the various project management knowledge areas.
		A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
a2.	Recognize the dynamically changing HSE	**A3.**	Demonstrate knowledge and

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	practices in increasing complex disciplines of engineering and industrial setup.		understanding of methodology, research planning, and analysis techniques.
		A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently
j. Cognitive/ Intellectual Skills: Upon successful completion of the **Health, Safety and Environment Management,** the graduates will be able to:		**J. Cognitive/ Intellectual Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
b1.	Design appropriate HSE management systems to improve productivity, quality and overall performance.	**B1.**	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
b2.	Develop efficient systems for HSE management based on principles for experience feedback and learning.	**B2.**	Critically evaluate decision making techniques to aid management judgement;
		B3.	Engage in analytical and critical thinking with respect to the planning of engineering design and development projects;
		B4.	Formulate hypothesis, design and perform experiments/research scientifically to solve and explain observed phenomena.
k. Professional and Practical Skills: Upon successful completion of the **Health, Safety and Environment Management Course,** the graduates will be able to:		**K. Professional and Practical Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
c1.	Apply acquired knowledge on real cases to understand businesses' working environment organization and to master the concept HSE risk in relation to work environment and	**C1.**	Apply expertly several different techniques used in the management and control of projects.
		C2.	Collect, interpret, and use data

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	methods for evaluation.		effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.
c2.	Select methods for HSE systems analysis for a given technical system and reflect on the differences and suitability of the methods.	**C3.**	Initiate, plan, execute, and close out a project utilizing project management concepts.
l. Transferable Skills: Upon successful completion of the **Health, Safety and Environment Management,** the graduates will be able to:		**L. Transferable Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
d1.	Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to HSE problems.	**D1.**	Prepare a complete thesis and reports, present the ideas clearly and defend them.
		D2.	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.
d2.	Communicate effectively on the impact of HSE solutions on productivity, quality and society at large.	**D3.**	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.

V. Alignment of CILOs to Teaching and Assessment Strategies

i. Alignment of Knowledge and Understanding CILOs:

Knowledge and Understanding CILOs		Teaching Strategies	Assessment Strategies
a1.	Demonstrate understanding of the health, safety and environment (HSE) legal and behavioral issues and the consequent responsibilities relevant to HSE management practices in the engineering profession.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussions	▪ Group work ▪ Assignments ▪ Presentations ▪ Exams
a2.	Recognize the dynamically changing HSE practices in increasing complex disciplines of engineering and industrial setup.		

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j. Alignment of Intellectual Skills CILOs:			
Intellectual Skills CILOs		**Teaching Strategies**	**Assessment Strategies**
b1.	Design appropriate HSE management systems to improve productivity, quality and overall performance.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
b2.	Develop efficient systems for HSE management based on principles for experience feedback and learning.		

k. Alignment of Professional and Practical Skills CILOs:			
Professional and Practical Skills CILOs		**Teaching Strategies**	**Assessment Strategies**
c1.	Apply acquired knowledge on real cases to understand businesses' working environment organization and to master the concept HSE risk in relation to work environment and methods for evaluation.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
c2.	Select methods for HSE systems analysis for a given technical system and reflect on the differences and suitability of the methods.		

l. Alignment of Transferable (General) Skills CILOs:			
Transferable (General) Skills CILOs		**Teaching Strategies**	**Assessment Strategies**
d1.	Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to HSE problems.	▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations.
d2.	Communicate effectively on the impact of HSE solutions on productivity, quality and society at large.		

VI. Course Content

7. Theoretical Aspect

Order	Topic List / Units	Sub -Topics List	Number of Weeks	Contact Hours	Course ILOs

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1	**Introduction**	• Health, safety and the environment • HSE management and its relation to business success and growth of companies • Reasons for considering health, safety and environment • Cost of accidents	1	4	a.1, a.2, b.1, b.2
2	**Health and Safety**	• Worker safety and health • Property safeguarding • Main causes of accidents • Hierarchy of safety controls	2	8	a.1, a.2, b.1, b.2, c.1, c.2
3	**Environmental Protection and Climate Change**	• Environmental hazards - Air pollution -Waste management • Pollution control methodologies • Environmental permits • Regulatory compliance and reporting • Environmental sustainability • Mitigation & adaptation to climate change adverse impacts • Environmental costing/accounting • Introduction to EIA, need and scope of EIA	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.2
4	**HSE Legislative and Regulatory Framework**	• Laws, regulations and management systems • International standards • Law enforcement	1	4	a.1, a.2, b.1, b.2, c.1, c.2
5	Midterm Exam		1	4	a.1, a.2, b.1, b.2
6	**HSE Management Systems**	H&S management systems, ISO 45001	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
		Environmental management systems, ISO 14001	2	8	

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7	**Integrating HSE into Engineering Projects**	• Project management approach to HSE • Integrating risk management throughout project life cycle • HSE managers as project managers • HSE organization structure • Risk management cycle (PDCA cycle) • HSE software • HSE management plans - H&S management plans - Environmental management plans - Combined HSE management plans	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
8	**HSE Auditing**	• Consequences of Poor HSE management • The importance of HSE audits • The concept of compliance in the HSE context • The major auditing steps as described in ISO 19011 (and ISO/IEC 17021) - Prepare audit activities - Conduct the audit - Conclude the audit • Write the audit report and follow up • The consequences of HSE non-compliance	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
9	**Case Studies – HSE Approaches for Selected Engineering Projects**	• Energy and renewable energy projects • Construction projects • Oil & gas projects • Industrial projects • HSE auditing	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2

10	Final Exam	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
Number of Weeks /and Contact Hours Per Semester		**16**	**64**	

8. Practical Aspect **NA**

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
2				
Number of Weeks /and Contact Hours Per Semester				

9. Tutorial Aspect: **NA**

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
Number of Weeks /and Units Per Semester		**15**	**30**	

VII. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

VIII. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations

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VIII. Assessment Methods of the Course:

- Written Exams

IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due	CILOs (symbols)
1	• Readings: Each week readings; based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Final Activity Report and deliver a PowerPoint presentation within a plenary session.	Group	30	3-14	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
	Total Score		**30**	-	-

X. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	CILOs

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1	Assignments	3-14	30	30%	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
2	Mid-Term Exam	9	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1
3	Final Exam	16	50	50%	
Total			**100**	**100%**	-

VIII Learning Resources and Facilities

1- Required Textbook(s)

- Frances Alston and Emily J. Millikin, 'Guide to Environment Safety & Health Management', CRC Press, 2016.
- Omar Al-Sakaf, 'Introduction to Industrial Safety', First Edition, 2016.

2- Essential References

- Stephen Asbury, ' Health and Safety, Environment and Quality Audits - A Risk-based Approach, 3rd Edition, Routledge-Taylor & Francis Group, 2018.
- Iñaki Heras-Saizarbitoria (Editor), 'ISO 9001, ISO 14001, and New Management Standards', Springer, 2018.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

-

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Program Specification

iii. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4
الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.	5
الانتحال Plagiarism: - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك	6
سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ	7

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Program Specification

Academic Year: ……....

Course Plan (Syllabus): Health, Safety and Environment Management

I. Information about Faculty Member Responsible for the Course:

Name	**Prof. Dr. Eng. Omar H. Al-Sakaf**	**Office Hours**					
Location &Telephone No.	Faculty of Engineering Mobile: 733772328/773332328	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	oalsakaf@gmail.com oalsakaf@yahoo.com		08:00 - 12:00				

II. General Information about the Course:

19	**Course Title**	**Health, Safety and Environment Management**			
20	**Course Code and Number**	**CE594**			
21	**Credit Hours**	**Credit Hours**			**Total**
		Lecture	**Practical**	**Seminar/Tutorial**	
		4	-	-	**4**
22	**Study Level and Semester**	**Second Semester**			
23	**Pre-requisites**	-			
24	**Co –requisite**	-			
25	**Program (s) in which the course is offered**	MSc. in Engineering Project Management			
26	**Language of teaching the course**	English			
27	**Location of teaching the course**	**Faculty of Engineering**			

II. Course Description:

This course aims to teach the science and practice of health, safety and environment HSE management in the context of a team approach. It delivers an understanding of what constitutes an HSE management system and how these systems are applied in the different engineering disciplines to integrate health, safety and environment issues in all activities of the engineering

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profession and throughout the project life cycle as well. On successful completion of the course, students should be in a position to identify, evaluate and provide solutions to a wide range of health, safety and environmental problems, and function well in a multi-disciplinary team. The comprehensive syllabus recognizes the importance of technical and practical skills as well as the need for good management skills and critical thinking.

IV. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Health, Safety and Environment Management** Course, the graduates will be able to:

a1 - Demonstrate understanding of the health, safety and environment (HSE) legal and behavioral issues and the consequent responsibilities relevant to HSE management practices in the engineering profession.

a2 - Recognize the dynamically changing HSE practices in increasing complex disciplines of engineering and industrial setup.

b1 - Design appropriate HSE management systems to improve productivity, quality and overall performance.

b2 - Develop efficient systems for HSE management based on principles for experience feedback and learning.

c1 - Apply acquired knowledge on real cases to understand businesses' working environment organization and to master the concept HSE risk in relation to work environment and methods for evaluation.

c2 - Select methods for HSE systems analysis for a given technical system and reflect on the differences and suitability of the methods.

d1 - Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to HSE problems.

d2 - Communicate effectively on the impact of HSE solutions on productivity, quality and society at large.

XI. Course Content

A – Theoretical Aspects

Order	Topics List	Week Due	Contact Hours
1	Introduction	Week 1	4

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XI. Course Content			
A – Theoretical Aspects			
2	Health and Safety	Week 2 - 3	8
3	Environmental Protection and Climate Change	Week 4 - 5	8
4	HSE Legislative and Regulatory Framework	Week 6	4
5	HSE Management Systems - H&S management systems, ISO 45001	Week 7 - 8	8
6	Midterm Exam	Week 9	4
7	HSE Management Systems - Environmental management systems, ISO 14001	Week 10 - 11	8
8	Integrating HSE into Engineering Projects	Week 12	4
9	HSE Auditing	Week 13	4
10	Case Studies – HSE Approaches for Selected Engineering Projects	Week 14 - 15	8
11	Final Exam	Week 16	4
Number of Weeks and Units Per Semester		**16**	**64**

5. Practical Aspect NA				
Order	**Practical / Tutorials topics**	**Number of Weeks**	**Contact Hours**	**Course ILOs**
1				
2				
Number of Weeks /and Contact Hours Per Semester				

6. Training/ Tutorials/ Exercises Aspects: NA			
Order	**Tutorials/ Exercises**	**Week Due**	**Contact Hours**
1			
2			

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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Number of Weeks /and Contact Hours Per Semester	

V. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

VI. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due
1	• Readings: Each week readings; based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Final Activity Report and deliver a PowerPoint presentation within a plenary session.	Group	30	3-14

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	Total Score	30	-

XI. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1	Assignments	3-14	30	30%
2	Mid-Term Exam	9	20	20%
3	Final Exam	16	50	50%
Total			**100**	**100%**

VIII Learning Resources and Facilities

1- Required Textbook(s)

- Frances Alston and Emily J. Millikin, 'Guide to Environment Safety & Health Management', CRC Press, 2016.
- Omar Al-Sakaf, 'Introduction to Industrial Safety', First Edition, 2016.

2- Essential References

- Stephen Asbury, ' Health and Safety, Environment and Quality Audits - A Risk-based Approach, 3rd Edition, Routledge-Taylor & Francis Group, 2018.
- Iñaki Heras-Saizarbitoria (Editor), 'ISO 9001, ISO 14001, and New Management Standards', Springer, 2018.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)
-

iv. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
1	سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.
2	الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.
3	ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.
4	التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.
5	الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	الانتحال Plagiarism: – في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

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Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			

8- Course Specification of: Soft Skills for Project Managers

Course Code (CE595)

XI. General Information About the Course:						
13.	**Course Title:**	Soft Skills for Project Managers				
14.	**Course Code and Number:**	CE595				
15.	**Credit Hours:**	**Credit Hours**			**Total**	
		Lecture	Practical	Seminar/Tutorial		
		4	-	-	4	
16.	**Study Level and Semester:**	Second Semester				
17.	**Pre-requisites (if any):**	-				
18.	**Co-requisites (if any):**	-				
19.	**Program (s) in which the course is offered:**	MSc. in Engineering Project Management				
20.	**Language of teaching the course:**	English and/or Arabic				
21.	**Study System:**	Courses & Thesis				
22.	**Prepared By:**	Prof. Dr. Eng. Omar H. Al-Sakaf				
23.	**Reviewed by:**	Prof. Dr. Wael Al-Aghbari				
24.	**Date of Approval:**					

XII. Course Description:

This course is about transversal (also denoted as soft) skills. It discusses what is talent, and to what extent success in professional life depends on non-technical skills. Technical skills are the stones to build your professionality, but soft skills are the cement. Soft skills form an essential component of education and training programs for students, whether they are enrolled in a degree in Engineering, Science, Economy, Law, Language, or whatever else. Students will learn how to acquire the necessary skills to be a successful engineer. In particular, non-technical (soft skills) are discussed; among them, emphasis will be given to inductive/deductive/analytical/design reasoning, to communication skills and employability. Motivated by this, the course in particular addresses the topics of project management and soft skills, cognitive/intellectual processes and soft skills, employability, learning skills, inter-personal communication, team working and leadership, and effective problem-solving and decision-making. The course will also address the issue of the new competences and professionalities required by the 4th industrial revolution (Industry 4.0).

XIII. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Soft Skills for Project Managers** Course, the graduates will be able to:

a1 - Recognize the importance of soft skills as success skills for project managers and teams in particular and for engineers in general.

a2 - Identify the key characteristics of soft skills.

b1 - Develop effective approaches and solutions to solve problems, conflicts and other issues faced throughout the project life cycle.

b2 - Create appropriate examples and culture of mutual respect, team work, active participation and commitment, motivation and positive attitudes through project management teams and project stakeholders to contribute to project success.

c1 - Apply soft skills effectively to a variety of professional settings throughout the project cycle.

c2 - Exercise management and leadership skills in the conduct of programs and projects of various size, scope, and complexity.

d1 - Become more effective through goal/target setting, self-motivation and practicing creative thinking.

d2 - Generate a positive and flexible approach to lifelong learning and employability.

XIV. Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs)

CILOs		PILOs	
m. Knowledge and Understanding: Upon successful completion of **the Soft Skills for Project Managers Course**, the graduates will be able to:		**M. Knowledge and Understanding:** Upon successful completion of the **MSc. Program in Engineering Project Management**, the graduates will be able to:	
a1.	Recognize the importance of soft skills as success skills for project managers and teams in particular and for engineers in general.	**A1.**	Describe the various project management knowledge areas.
		A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
a2.	Identify the key characteristics of soft skills.	**A3.**	Demonstrate knowledge and

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			understanding of methodology, research planning, and analysis techniques.
		A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to execute contemporary projects and operations effectively and efficiently
n. Cognitive/ Intellectual Skills: Upon successful completion of the **Soft Skills for Project Managers Course,** the graduates will be able to:		**N. Cognitive/ Intellectual Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
b1.	Develop effective approaches and solutions to solve problems, conflicts and other issues faced throughout the project life cycle.	**B1.**	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
b2.	Create appropriate examples and culture of mutual respect, team work, active participation and commitment, motivation and positive attitudes through project management teams and project stakeholders to contribute to project success.	**B2.**	Critically evaluate decision making techniques to aid management judgement;
		B3.	Engage in analytical and critical thinking with respect to the planning of engineering design and development projects;
o. Professional and Practical Skills: Upon successful completion of the **Soft Skills for Project Managers Course,** the graduates will be able to:		**O. Professional and Practical Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
c1.	Apply soft skills effectively to a variety of professional settings throughout the project cycle.	**C1.**	Apply expertly several different techniques used in the management and control of projects.
c2.	Exercise management and leadership skills in the conduct of programs and projects of various size, scope, and complexity.	**C2.**	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.

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		C3.	Initiate, plan, execute, and close out a project utilizing project management concepts.
p. Transferable Skills: Upon successful completion of the **Soft Skills for Project Managers Course,** the graduates will be able to:		**P. Transferable Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
d1.	Become more effective through goal/target setting, self-motivation and practicing creative thinking.	**D1.**	Prepare a complete thesis and reports, present the ideas clearly and defend them.
d2.	Generate a positive and flexible approach to lifelong learning and employability.	**D2.**	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.
		D3.	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.

XV. Alignment of CILOs to Teaching and Assessment Strategies

m. Alignment of Knowledge and Understanding CILOs:

Knowledge and Understanding CILOs		Teaching Strategies	Assessment Strategies
a1.	Recognize the importance of soft skills as success skills for project managers and teams in particular and for engineers in general.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussions	▪ Group work ▪ Assignments ▪ Presentations ▪ Exams
a2.	Identify the key characteristics of soft skills.		

n. Alignment of Intellectual Skills CILOs:

Intellectual Skills CILOs		Teaching Strategies	Assessment Strategies
b1.	Develop effective approaches and solutions to solve problems, conflicts and other issues faced throughout the project life cycle.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
b2.	Create appropriate examples and culture of mutual respect, team work,		

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	active participation and commitment, motivation and positive attitudes through project management teams and project stakeholders to contribute to project success.		

o. Alignment of Professional and Practical Skills CILOs:

Professional and Practical Skills CILOs		Teaching Strategies	Assessment Strategies
c1.	Apply soft skills effectively to a variety of professional settings throughout the project cycle.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
c2.	Exercise management and leadership skills in the conduct of programs and projects of various size, scope, and complexity.		

p. Alignment of Transferable (General) Skills CILOs:

Transferable (General) Skills CILOs		Teaching Strategies	Assessment Strategies
d1.	Become more effective through goal/target setting, self-motivation and practicing creative thinking.	▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations.
d2.	Generate a positive and flexible approach to lifelong learning and employability.		

XVI. Course Content

10. Theoretical Aspect

Order	Topic List / Units	Sub -Topics List	Number of Weeks	Contact Hours	Course ILOs
1	**Introduction**	• Definition of Soft Skills • Soft Skills versus Hard Skills • Importance of Soft Skills • Purpose and process of Soft Skills	1	4	a.1, a.2, b.1, b.2

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2	**Project Management and Soft Skills**	• Project Management: a Pragmatic/logical Approach • Behavioral Models for Project Managers • The role of the Project Manager	1	4	a.1, a.2, b.1, b.2, c.1, c.2
3	**Cognitive/intellectual Processes and Soft Skills**	• Cognitive Processes • Effective influence • Emotional intelligence • Soft Skills: Dublin Descriptors • Soft Skills: World Economic Forum WEF, skills of the future • Soft Skills – Categories • Elementary and Complex Soft Skills	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d1, d.2
4	**Employability**	• Competence; a Key to Success • Top Ten Soft Skills according to World Economic Forum WEF • Industry: Key Enabling Technologies • New Profiles: The Innovation Manager • Required transversal competences • SWOT Analysis • Enhancing Soft Skills	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d1, d2
5	**Learning Skills**	• Self-management • Critical thinking development • Reflective thinking and writing	1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
6	**Exceptional Communication skills**	• Main styles of communication • Written and spoken language skills • Presentation skills • Effective negotiating	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2

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		• Active listening • Academic debate • Group work • Peer-to-peer Interaction • Intercultural Communication			
7	Midterm Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2
8	**Strong Leadership skills**	• Leadership styles • Team motivation • Stakeholders engagement • Delivering great results	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
9	**Effective Problem-Solving and Decision-Making**	• Problem-solving and decision-making processes • Effective problem-solving techniques • Evaluation of solutions • Risk management • Decision-making	2	8	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
10	**Further Soft Skills for project managers and teams**	• Conflict management • Coaching • Team Building/Coordination Skills • Prioritization • Cultural awareness/Cultural sensitivity • Strong work ethic	3	12	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
11	Final Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
Number of Weeks /and Contact Hours Per Semester			**16**	**64**	

11. Practical Aspect		**NA**		
Order	**Practical / Tutorials topics**	**Number of Weeks**	**Contact Hours**	**Course ILOs**

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1				
2				
Number of Weeks /and Contact Hours Per Semester				

12. Tutorial Aspect: NA				
No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
Number of Weeks /and Units Per Semester		15	30	

XVII. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

XVIII. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

XIX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due	CILOs (symbols)
1	• Readings: Each week readings; based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete	Group	30	3-14	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2

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	analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Final Activity Report and deliver a PowerPoint presentation within a plenary session.				
	Total Score		**30**	-	-

XX. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	CILOs
1	Assignments	3-14	30	30%	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
2	Mid-Term Exam	9	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1
3	Final Exam	16	50	50%	
Total			**100**	**100%**	-

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VIII Learning Resources and Facilities

1- Required Textbook(s)

- Randall L. Englund, Alfonso Bucero, 'Complete Project Manager-Integrating People, Organizational, and Technical Skills', Management Concepts, Inc., 2012.
- Barry Benator, Albert Thumann, 'Project Management and Leadership Skills for Engineering and Construction Projects', The Fairmont Press, 2003.
- Irwin, Brian, 'Managing Politics and Conflict in Projects', Management Concepts, Inc., 2008.

2- Essential References

- Cynthia Snyder Dionisio, 'A Project Manager's Book of Tools and Techniques', John Wiley & Sons, 2018.
- G. Michael Campbell, 'Communications Skills for Project Managers', AMACOM, 2009.
- W. Gibb Dyer Jr, Jeffrey H. Dyer, William G. Dyer, 'Team Building-Proven Strategies for Improving Team Performance', Jossey-Bass-A Wiley Imprint, 2013.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

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v. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
1	سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.
2	الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.
3	ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.
4	التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.
5	الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	الانتحال Plagiarism: - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

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Academic Year: ……....

Course Plan (Syllabus): Soft Skills for Project Managers

II. Information about Faculty Member Responsible for the Course:

Name	**Prof. Dr. Eng. Omar H. Al-Sakaf**	**Office Hours**					
Location &Telephone No.	Faculty of Engineering Mobile: 733772328/773332328	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	oalsakaf@gmail.com oalsakaf@yahoo.com		08:00 - 12:00				

II. General Information about the Course:

28	**Course Title**	**Soft Skills for Project Managers**			
29	**Course Code and Number**	**CE595**			
30	**Credit Hours**	**Credit Hours**			**Total**
		Lecture	**Practical**	**Seminar/Tutorial**	
		4	-	-	**4**
31	**Study Level and Semester**	**Second Semester**			
32	**Pre-requisites**	-			
33	**Co –requisite**	-			
34	**Program (s) in which the course is offered**	MSc. in Engineering Project Management			
35	**Language of teaching the course**	English and/or Arabic			
36	**Location of teaching the course**	**Faculty of Engineering**			

IX. Course Description:

This course is about transversal (also denoted as soft) skills. It discusses what is talent, and to what extent success in professional life depends on non-technical skills. Technical skills are the stones to build your professionality, but soft skills are the cement. Soft skills form an essential component of education and training programs for students, whether they are enrolled in a degree in Engineering, Science, Economy, Law, Language, or whatever else. Students will learn how to acquire the necessary skills to be a successful engineer. In particular, non-technical (soft skills) are

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discussed; among them, emphasis will be given to inductive/deductive/analytical/design reasoning, to communication skills and employability. Motivated by this, the course in particular addresses the topics of project management and soft skills, cognitive/intellectual processes and soft skills, employability, learning skills, inter-personal communication, team working and leadership, and effective problem-solving and decision-making. The course will also address the issue of the new competences and professionalities required by the 4th industrial revolution (Industry 4.0).

X. Course Intended Learning Outcomes (CILOs):

Upon successful completion of **Soft Skills for Project Managers** Course, the graduates will be able to:

a1 - Recognize the importance of soft skills as success skills for project managers and teams in particular and for engineers in general.

a2 - Identify the key characteristics of soft skills.

b1 - Develop effective approaches and solutions to solve problems, conflicts and other issues faced throughout the project life cycle.

b2 - Create appropriate examples and culture of mutual respect, team work, active participation and commitment, motivation and positive attitudes through project management teams and project stakeholders to contribute to project success.

c1 - Apply soft skills effectively to a variety of professional settings throughout the project cycle.

c2 - Exercise management and leadership skills in the conduct of programs and projects of various size, scope, and complexity.

d1 - Become more effective through goal/target setting, self-motivation and practicing creative thinking.

d2 - Generate a positive and flexible approach to lifelong learning and employability.

XII. Course Content

A – Theoretical Aspects

Order	Topics List	Week Due	Contact Hours
1	Introduction	Week 1	4
2	Project Management and Soft Skills	Week 2	4

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A – Theoretical Aspects

3	Cognitive/intellectual Processes and Soft Skills	Week 3	4
4	Employability	Week 4	4
5	Learning Skills	Week 5	4
6	Exceptional Communication skills	Week 6 - 7	8
7	Midterm Exam	Week 8	4
8	Strong Leadership skills	Week 9 – 10	8
9	Effective Problem-Solving and Decision-Making	Week 11 – 12	8
10	Further Soft Skills for project managers and teams	Week 13 – 15	12
11	Final Exam	Week 16	4
Number of Weeks and Units Per Semester		**16**	**64**

7. Practical Aspect NA

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
2				
Number of Weeks /and Contact Hours Per Semester				

8. Training/ Tutorials/ Exercises Aspects: NA

Order	Tutorials/ Exercises	Week Due	Contact Hours
1	▪		
2	▪		
Number of Weeks /and Contact Hours Per Semester			

XI. Teaching Strategies:

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- Formal lectures
- Interactive discussions
- Group work
- Presentations

XII. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due
1	• Readings: Each week readings; based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Each work assigned for reading will have 1 or 2 presenters assigned to it from the class. • In general students will be asked to describe the main points of the paper and to offer a critique of the contents. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Final Activity Report and deliver a PowerPoint presentation within a plenary session.	Group	30	3-14
	Total Score		**30**	**-**

XI. Learning Assessment:

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1	Assignments	3-14	30	30%
2	Mid-Term Exam	9	20	20%
3	Final Exam	16	50	50%
Total			**100**	**100%**

VIII Learning Resources and Facilities

1- Required Textbook(s)

- Randall L. Englund, Alfonso Bucero, 'Complete Project Manager-Integrating People, Organizational, and Technical Skills', Management Concepts, Inc., 2012.
- Barry Benator, Albert Thumann, 'Project Management and Leadership Skills for Engineering and Construction Projects', The Fairmont Press, 2003.
- Irwin, Brian, 'Managing Politics and Conflict in Projects', Management Concepts, Inc., 2008.

2- Essential References

- Cynthia Snyder Dionisio, 'A Project Manager's Book of Tools and Techniques', John Wiley & Sons, 2018.
- G. Michael Campbell, 'Communications Skills for Project Managers', AMACOM, 2009.
- W. Gibb Dyer Jr, Jeffrey H. Dyer, William G. Dyer, 'Team Building-Proven Strategies for Improving Team Performance', Jossey-Bass-A Wiley Imprint, 2013.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

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vi. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4
الغش Cheating: - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.	5
الانتحال Plagiarism: - في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك	6
سياسات أخرى Other policies: - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ	7

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9- Course Specification of: Pre-Project Planning and Feasibility Analysis

Course Code (CE596)

XXI. General Information About the Course:						
25.	**Course Title:**	Pre-Project Planning and Feasibility Analysis				
26.	**Course Code and Number:**	CE596				
27.	**Credit Hours:**	**Credit Hours**			**Total**	
		Lecture	Practical	Seminar/Tutorial		
		4	-	-	4	
28.	**Study Level and Semester:**	First Semester				
29.	**Pre-requisites (if any):**	-				
30.	**Co-requisites (if any):**	-				
31.	**Program (s) in which the course is offered:**	MSc. in Engineering Project Management				
32.	**Language of teaching the course:**	English and/or Arabic				
33.	**Study System:**	Courses & Thesis				
34.	**Prepared By:**	Prof. Dr. Eng. Omar H. Al-Sakaf				
35.	**Reviewed by:**	Dr. Tarek Barakat				
36.	**Date of Approval:**					

XXII. Course Description:

This course focuses on the pre-project phase of a project's life cycle and on the challenges faced by the pre-project planning team in helping the project owner with the go-ahead decision for the project. Topics tackled include: assimilation of client needs; market assessment studies; impacts of laws and regulations on the facility program; surveys of project area infrastructure conditions; investigation of site conditions; project scope validation; project execution planning, project costs and schedule estimation; project life-cycle analysis; financial planning; and financial feasibility framework design and analysis.

XXIII. Course Intended Learning Outcomes (CILOs):

Upon successful completion of the **Pre-Project Planning and Feasibility Analysis** Course, the graduates will be able to:

a1 - Understand the overall process of pre-project planning.

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a2 - Understand concepts, principles, and steps of feasibility studies.

b1 - Analyze the concepts and steps of conducting pre-planning and feasibility studies.

b2 - Develop a solid understanding of how the project site and technology play a crucial role in the decision-making process.

c1 - Apply the technical expertise injected into the pre-project planning process in project development.

c2 - Assess the project risks that need to be considered and accounted for during the pre-project planning phase.

d1 - Attain appropriate effective written and oral communication skills relevant to feasibility studies.

d2 - Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to project pre-planning challenges.

XIV. Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs)

CILOs		PILOs	
q. Knowledge and Understanding: Upon successful completion of **the Pre-Project Planning and Feasibility Analysis Course**, the graduates will be able to:		**Q. Knowledge and Understanding:** Upon successful completion of the **MSc. Program in Engineering Project Management**, the graduates will be able to:	
a1.	Understand the overall process of pre-project planning.	**A1.**	Describe the various project management knowledge areas.
		A2.	Demonstrate knowledge and understanding of planning, analysis, supervision and monitoring and control of works related to the engineering disciplines.
a2.	Understand concepts, principles, and steps of feasibility studies.	**A3.**	Demonstrate knowledge and understanding of methodology, research planning, and analysis techniques.
		A4.	Demonstrate knowledge and understanding of skills and techniques of engineering and management to

			execute contemporary projects and operations effectively and efficiently
r. Cognitive/ Intellectual Skills: Upon successful completion of the **Pre-Project Planning and Feasibility Analysis Course,** the graduates will be able to:		**R. Cognitive/ Intellectual Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
b1.	Analyze the concepts and steps of conducting pre-planning and feasibility studies.	**B1.**	Identify, analyze, formulate, and solve engineering problems that involve constrained resources considering factors such as socio-economic, environmental, health and safety.
b2.	Develop a solid understanding of how the project site and technology play a crucial role in the decision-making process.	**B2.**	Critically evaluate decision making techniques to aid management judgement;
		B3.	Engage in analytical and critical thinking with respect to the planning of engineering design and development projects;
		B4.	Formulate hypothesis, design and perform experiments/research scientifically to solve and explain observed phenomena.
s. Professional and Practical Skills: Upon successful completion of the **Pre-Project Planning and Feasibility Analysis Course,** the graduates will be able to:		**S. Professional and Practical Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
c1.	Apply the technical expertise injected into the pre-project planning process in project development.	**C1.**	Apply expertly several different techniques used in the management and control of projects.
c2.	Assess the project risks that need to be considered and accounted for during the pre-project planning phase.	**C2.**	Collect, interpret, and use data effectively to make decisions and assess their associated impacts including socio-economic, environmental, health and safety.

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		C3.	Initiate, plan, execute, and close out a project utilizing project management concepts.
t. Transferable Skills: Upon successful completion of the **Pre-Project Planning and Feasibility Analysis Course,** the graduates will be able to:		**T. Transferable Skills:** Upon successful completion of the **MSc. Program in Engineering Project Management,** the graduates will be able to:	
d1.	Attain appropriate effective written and oral communication skills relevant to feasibility studies.	**D1.**	Prepare a complete thesis and reports, present the ideas clearly and defend them.
d2.	Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to project pre-planning challenges.	**D2.**	Balance professional and ethical responsibilities including contemporary issues and environmental awareness.
		D3.	Conduct independently and communicate research that advances and extends knowledge and scholarship in related fields.

XXV. Alignment of CILOs to Teaching and Assessment Strategies

q. Alignment of Knowledge and Understanding CILOs:

Knowledge and Understanding CILOs		Teaching Strategies	Assessment Strategies
a1.	Understand the overall process of pre-project planning.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussions	▪ Group work ▪ Assignments ▪ Presentations ▪ Written Exams
a2.	Understand concepts, principles, and steps of feasibility studies.		

r. Alignment of Intellectual Skills CILOs:

Intellectual Skills CILOs		Teaching Strategies	Assessment Strategies
b1.	Analyze the concepts and steps of conducting pre-planning and feasibility studies.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
b2.	Develop a solid understanding of how the project site and technology play a crucial role in the decision-making		

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	process.		

s. Alignment of Professional and Practical Skills CILOs:

Professional and Practical Skills CILOs		Teaching Strategies	Assessment Strategies
c1.	Apply the technical expertise injected into the pre-project planning process in project development.	▪ Lectures ▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations ▪ Exams
c2.	Assess the project risks that need to be considered and accounted for during the pre-project planning phase.		

t. Alignment of Transferable (General) Skills CILOs:

Transferable (General) Skills CILOs		Teaching Strategies	Assessment Strategies
d1.	Attain appropriate effective written and oral communication skills relevant to feasibility studies.	▪ Demonstrations ▪ Interactive class discussion	▪ Assignments ▪ Presentations.
d2.	Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to project pre-planning challenges.		

XVI. Course Content

13. Theoretical Aspect

Order	Topic List / Units	Sub -Topics List	Number of Weeks	Contact Hours	Course ILOs
1	**Introduction**	• What is pre-project planning? • What defines a project? • Pre-project planning models	1	4	a.1, a.2, b.1, b.2
2	**Initial Project Identification: Description and Screening**	• Initial Screen • Project Screening: Social and Environmental Safeguards Integration	2	8	a.1, a.2, b.1, b.2, c.1, c.2
3	**Project Pre-Feasibility Study Process**	• Pre-feasibility analysis objectives • Steps and results	3	12	a.1, a.2, b.1, b.2, c.1, c.2,

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		• Verification of results			d1, d.2
4	Midterm Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2
5	**Project Feasibility Study Process**	• Needs analysis • Options analysis • Technical feasibility • Financial assessment • Value assessment • Economic assessment • Demonstration of project viability • Verification of information and sign-off • Revisiting feasibility study	4	16	a.1, a.2, b.1, b.2, c.1, c.2, d1, d2
6	**Case Studies - Pre-project planning and feasibility studies for selected engineering projects**	• From different sectors	4	16	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
7	Final Exam		1	4	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
Number of Weeks /and Contact Hours Per Semester			**16**	**64**	

14. Practical Aspect **NA**

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
2				

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Number of Weeks /and Contact Hours Per Semester			

15. Tutorial Aspect: NA

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
Number of Weeks /and Units Per Semester		15	30	

XVII. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

XVIII. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

XIX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due	CILOs (symbols)
1	• Group work; groups will develop feasibility analysis of selected fictive projects from diverse sectors in parallel with weekly gained knowledge through lectures, group discussions and readings assignments. Based on each reading/topic, a written assignment will	Group	30	3-14	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2

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	be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Feasibility Analysis Report and deliver a PowerPoint presentation within a plenary session.				
	Total Score		**30**	-	-

XXX. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	CILOs
1	Assignments	3-14	30	30%	a.1, a.2, b.1, b.2, c.1, c.2, d.1, d.2
2	Mid-Term Exam	7	20	20%	a.1, a.2, b.1, b.2, c.1, c.2, d.1
3	Final Exam	16	50	50%	
Total			**100**	**100%**	-

VIII Learning Resources and Facilities

1- Required Textbook(s)

- Mesly, Olivier, 'Project Feasibility: Tools for Uncovering Points of Vulnerability', Taylor & Francis Group, 2017.
- Scott R. Herriott, 'Feasibility Analysis for Sustainable Technologies - An Engineering-

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Economic Perspective', Business Expert Press, 2015.

2- Essential References

- Project Management Institute PMI, 'Business Analysis for Practitioners: A Practice Guide', Project Management Institute, 2015.
- European Integration Office, 'Guide to the Logical Framework Approach', Global Print, 2nd Edition, 2011.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

vii. الضوابط والسياسات المتبعة في المقرر Course Policies	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
سياسة حضور الفعاليات التعليمية Class Attendance: - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.	1
الحضور المتأخر Tardy: - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.	2
ضوابط الامتحان Exam Attendance/Punctuality: - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.	3
التعيينات والمشاريع Assignments & Projects: - يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.	4

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5	**الغش Cheating:** - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	**الانتحال Plagiarism:** – في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	**سياسات أخرى Other policies:** - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

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Program Specification

Academic Year: ……....

Course Plan (Syllabus): Pre-Project Planning and Feasibility Analysis

II. Information about Faculty Member Responsible for the Course:

Name	**Prof. Dr. Eng. Omar H. Al-Sakaf**	**Office Hours**					
Location &Telephone No.	Faculty of Engineering Mobile: 733772328/773332328	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	oalsakaf@gmail.com oalsakaf@yahoo.com		08:00 - 12:00				

IV. General Information about the Course:

37	**Course Title**	**Pre-Project Planning and Feasibility Analysis**			
38	**Course Code and Number**	**CE596**			
39	**Credit Hours**	**Credit Hours**			**Total**
		Lecture	**Practical**	**Seminar/Tutorial**	
		4	-	-	**4**
40	**Study Level and Semester**	**First Semester**			
41	**Pre-requisites**	-			
42	**Co –requisite**	-			
43	**Program (s) in which the course is offered**	MSc. in Engineering Project Management			
44	**Language of teaching the course**	English			
45	**Location of teaching the course**	**Faculty of Engineering**			

V. Course Description:

This course focuses on the pre-project phase of a project's life cycle and on the challenges faced by the pre-project planning team in helping the project owner with the go-ahead decision for the project. Topics tackled include: assimilation of client needs; market assessment studies; impacts of laws and regulations on the facility program; surveys of project area infrastructure conditions;

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investigation of site conditions; project scope validation; project execution planning, project costs and schedule estimation; project life-cycle analysis; financial planning; and financial feasibility framework design and analysis.

VI. Course Intended Learning Outcomes (CILOs):

Upon successful completion of the **Pre-Project Planning and Feasibility Analysis** Course, the graduates will be able to:

a1 - Understand the overall process of pre-project planning.

a2 - Understand concepts, principles, and steps of feasibility studies.

b1 - Analyze the concepts and steps of conducting pre-planning and feasibility studies.

b2 - Develop a solid understanding of how the project site and technology play a crucial role in the decision-making process.

c1 - Apply the technical expertise injected into the pre-project planning process in project development.

c2 - Assess the project risks that need to be considered and accounted for during the pre-project planning phase.

d1 - Attain appropriate effective written and oral communication skills relevant to feasibility studies.

d2 - Function effectively as an individual or leader in diverse teams and in multi-disciplinary settings so as to provide practical solutions to project pre-planning challenges.

XIII. Course Content

A – Theoretical Aspects

Order	Topics List	Week Due	Contact Hours
1	Introduction	Week 1	4
2	Initial Project Identification: Description and Screening	Week 2 - 3	8
3	Project Pre-Feasibility Study Process	Week 4 - 6	12
4	Midterm Exam	Week 7	4
5	Project Feasibility Study Process	Week 8 – 11	16

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XIII. Course Content

A – Theoretical Aspects

6	Case Studies - Pre-project planning and feasibility studies for selected engineering projects	Week 12 – 15	16
7	Final Exam	Week 16	4
Number of Weeks and Units Per Semester		**16**	**48**

9. Practical Aspect NA

Order	Practical / Tutorials topics	Number of Weeks	Contact Hours	Course ILOs
1				
2				
Number of Weeks /and Contact Hours Per Semester				

10. Training/ Tutorials/ Exercises Aspects: NA

Order	Tutorials/ Exercises	Week Due	Contact Hours
1	▪		
2	▪		
Number of Weeks /and Contact Hours Per Semester			

VII. Teaching Strategies:

- Formal lectures
- Interactive discussions
- Group work
- Presentations

VIII. Assessment Methods of the Course:

- Group work
- Assignments
- Presentations
- Written Exams

Head of the Department	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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IX. Tasks and Assignments:

No	Assignments/ Tasks	Individual/ Group	Mark	Week Due
1	• Group work; groups will develop feasibility analysis of selected fictive projects from diverse sectors in parallel with weekly gained knowledge through lectures, group discussions and readings assignments. Based on each reading/topic, a written assignment will be issued. Students will be asked to write synthetic essays and/or complete analyses pertaining to the reading materials. These will be short (>4, <5 pages double spaced) pieces. • Students are expected to prepare for class by reading the assigned reading prior to the class for which they are listed, and to participate in class sessions/group discussions. • By the end of the semester (Week 14), Student Groups will submit their Feasibility Analysis Report and deliver a PowerPoint presentation within a plenary session.	Group	30	3-14
	Total Score		**30**	**-**

XI. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1	Assignments	3-14	30	30%
2	Mid-Term Exam	7	20	20%
3	Final Exam	16	50	50%
Total			**100**	**100%**

VIII Learning Resources and Facilities

1- Required Textbook(s)

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Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			

- Mesly, Olivier, 'Project Feasibility: Tools for Uncovering Points of Vulnerability', Taylor & Francis Group, 2017.
- Scott R. Herriott, 'Feasibility Analysis for Sustainable Technologies - An Engineering-Economic Perspective', Business Expert Press, 2015.

2- Essential References

- Project Management Institute PMI, 'Business Analysis for Practitioners: A Practice Guide', Project Management Institute, 2015.
- European Integration Office, 'Guide to the Logical Framework Approach', Global Print, 2nd Edition, 2011.

3- Electronic Materials and Websites *etc.*

- Course Power Point.
- Video clips.
- Links to information resources.

Educational and research Facilities and Equipment Required

Technology Resources
(AV, data show, Smart Board, software, etc.)

Data Show, Internet Access

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

viii.	**الضوابط والسياسات المتبعة في المقرر Course Policies**
	بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:
1	**سياسة حضور الفعاليات التعليمية Class Attendance:** - يلتزم الطالب بحضور 75% من المحاضرات ويحرم في حال عدم الوفاء بذلك. - يقدم أستاذ المقرر تقريرا بحضور وغياب الطلاب للقسم ويحرم الطالب من دخول الامتحان في حال تجاوز الغياب 25% ويتم اقرار الحرمان من مجلس القسم.
2	**الحضور المتأخر Tardy:** - يسمح للطالب حضور المحاضرة إذا تأخر لمدة ربع ساعة لثلاث مرات في الفصل الدراسي، وإذا تأخر زيادة عن ثلاث مرات يحذر شفويا من أستاذ المقرر، وعند عدم الالتزام يمنع من دخول المحاضرة.
3	**ضوابط الامتحان Exam Attendance/Punctuality:** - لا يسمح للطالب دخول الامتحان النهائي إذا تأخر مقدار (20) دقيقة من بدء الامتحان - إذا تغيب الطالب عن الامتحان النهائي تطبق اللوائح الخاصة بنظام الامتحان في الكلية.
4	**التعيينات والمشاريع Assignments & Projects:**

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	- يحدد أستاذ المقرر نوع التعيينات في بداية الفصل ويحدد مواعيد تسليمها وضوابط تنفيذ التكليفات وتسليمها. - إذا تأخر الطالب في تسليم التكليفات عن الموعد المحدد يحرم من درجة التكليف الذي تأخر في تسليمه.
5	**الغش Cheating:** - في حال ثبوت قيام الطالب بالغش في الامتحان النصفي أو النهائي تطبق عليه لائحة شؤون الطلاب. - في حال ثبوت قيام الطالب بالغش او النقل في التكليفات والمشاريع يحرم من الدرجة المخصصة للتكليف.
6	**الانتحال Plagiarism:** – في حالة وجود شخص ينتحل شخصية طالب لأداء الامتحان نيابة عنه تطبق اللائحة الخاصة بذلك
7	**سياسات أخرى Other policies:** - أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

10- - Course Specification of Computer Applications in Structural Engineering

11- Course Identification and General Information:

1.	**Course Title:**	*Computer Applications in Structural Engineering*				
2.	**Course Code & Number:**	CE 582				
3.	**Credit hours:**	C.H				**Credit Hours**
		Lecture.	**Laboratory**	**Seminars.**		
		2	2			3
4.	**Study semester at which this course is offered:**	2nd or 3rd semester				
5.	**Pre –requisite (if any):**	Non				
6.	**Co –requisite (if any):**	Advance structure analysis				
7.	**Program (s) in which the course is offered:**	MSc Structural Engineering				
8.	**Language of teaching the course:**	English+ Arabic				
9.	**Course type**	Required				
10.	**Location of teaching the course:**	Class room				
11.	**Prepared By:**	Dr. Ibrahim M. H. Alshaikh				
12.	**Date of Approval**					

12- Course Description:

This course is one of the modern specialized courses. It is also one of the required courses, among others, to achieve successful completion of the M.Sc. This course provides many advanced topics in the numerical analysis of structures using the finite element method (FEM) by applying them in the latest version of ABAQUS software.

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This software is one of the events of commercial programs used in modern scientific publication. This course aims to introduce how to use ABAQUS programs in solving structural engineering problems and research by using modeling tools, material definition, FE mesh, verification of FEM results.

13- Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Recognize the implementation of important tools and techniques in ABAQUS software and their relationship with contemporary engineering technologies and issues in the specialization field of structural engineering.	A2
a.2	Acquire advanced knowledge in using ABAQUS techniques and applying them in the field of work or the academic field in structural engineering and related fields.	A4
b.1	Select appropriate principles, methodologies, techniques, tools, and packages of ABAQUS software in the analysis, specification, development, and assessments of structural engineering systems.	B1
b.2	Analyze research to solve complex structural engineering problems using ABAQUS software.	B2
c.1	Use advanced methodology and skills in ABAQUS software to solve structural engineering problems.	C2
c.2	Apply acquired knowledge of ABAQUS software in analysis and design for structural engineering systems and the implementation process.	C3
d.1	Prepare the course assignments/projects and defend them by presenting effective and logical evidence.	D1
d.2	Conduct research collectively and independently in an effective way, which contributes to updating the students' knowledge and abilities in ABAQUS software in related fields.	D3

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a.1 Recognize the implementation of important tools and techniques in ABAQUS software and their	• Lectures. • Active learning.	• Final and midterm exam.

relationship with contemporary engineering technologies and issues in the specialization field of structural engineering.	• Self-Learning. • Independent study. • Computer hands-on sessions.	• Assignments. • Quizzes.
a.2 Acquire advanced knowledge in using ABAQUS techniques and applying them in the field of work or the academic field in structural engineering and related fields.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b.1 Select appropriate principles, methodologies, techniques, tools, and packages of ABAQUS software in the analysis, specification, development, and assessments of structural engineering systems.	• Lectures. • Analysis and Problem Solving. • Project supervision. • Self-Learning. • Simulation exercises. • Brain storming. • Research Presentations.	• Final and midterm exam. • Assignments. • Quizzes. • Course project and Course research.
b.2 Analyze research to solve complex structural engineering problems using ABAQUS software.		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c.1 Use advanced methodology and skills in ABAQUS software to solve structural engineering problems.	• Lectures. • Analysis and Problem Solving. • Project supervision. • Self-Learning. • Simulation exercises. • Brain storming. • Research Presentations.	• Final and midterm exam. • Assignments. • Quizzes. • Course project and Course research.
c.2 Apply acquired knowledge of ABAQUS software in analysis and design for structural engineering systems and the implementation process.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching

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Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d.1 Prepare the course assignments/projects and defend them by presenting effective and logical evidence.	• Dissertation. • Supervision. • Independent study. • Presenting reports. • Brainstorming. • Presenting researches.	• Written research proposal. • Written Exam. • Assignments. • Presentation. • Written report.
d.2 Conduct research collectively and independently in an effective way, which contributes to updating the students' knowledge and abilities in ABAQUS software in related fields.		

14- Course Content:

A – Lecture Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction	a1,a2,d1	• Importance of studying finite element simulation software.	1	2
2	Part and Assembly Tools	a1,b1,c2,d2	• Part and assembly module. • Import part from CAD software. • Parts assembly.	2	4
3	Materials and Sections	a1,a2,b1,b2,c1,c2,d2	• Linear and nonlinear material. • Section types.	1	2
4	Interaction and Constraints	a1,a2,b1,b2,c1,c2,d2	• Contact Algorithms. • Understanding interactions. • Constraints: tie, rigid body, and embedded region.	1	2
5	Finite Element Mesh	a1,a2,b1,c1,c2,d1	• Characterizing elements. • Element types. • Mesh classification. • Seed part and edge tools (coarse/fine mesh).	2	4
	Mid-Term Exam			1(8)	2
6	Loads and Boundary	a1,a2,b1,c1,c2,d1,d2	• Load types. • Types of Boundary	1	2

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	Conditions		Conditions.		
7	Analysis and Results	a1,b1,c2,d1,d2	• Job module. • Linear and nonlinear analysis. • Static and dynamic analysis. • Field output. • Visualization module.	1	2
8	Verification and Validation of FEM Results	a1,a2,b1,b2,c1,c2,d1,d2	• Simulation of RC frame. • Simulation of steel beam and joint. • Simulation of composite members. • Useful advanced techniques and tips.	5	10
	Final Exam			1(16)	3
Number of Weeks /and Units Per Semester				**16**	**33**

B - Practical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact hours	Learning Outcomes
1	Introduction	• ABAQUS Software installation.	1	2	a1,a2, c2,d1
2	Part and Assembly Tools	• Drawing different types of parts. • Apply assembly tools	2	4	a1,b1,c2,d2
3	Material and Section	• Creating sections. • Apply material definitions to model.	1	2	a1,a2,b1,b2,c1,c2,d2
4	Interaction and Constraints	• Creating interactions and constraints.	1	2	a1,a2,b1,b2,c1,c2,d2
5	Finite Element Mesh	• Assign mesh controls. • Mesh generation techniques. • Build a mesh from CAD geometry.	2	4	a1,a2,b1,c1,c2,d1
	Mid-Term Exam		1	2	a1,a2,b1,b2,c1,c2

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6	Loads and Boundary Conditions	• Apply load and boundary conditions.	1	2	a1,a2,b1,c1,c2,d1,d2
7	Analysis and Results	• Apply static and dynamic analysis. • Reading, exporting, and printing of charts and figures.	1	2	a1,b1,c2,d1,d2
8	Verification and Validation of FEM Results	• Simulation of RC frame. • Simulation of steel beam and joint. • Simulation of composite member. • Useful advanced techniques and tips.	4	8	a1,a2,b1,b2,c1,c2,d1,d2
9	Discussion of students' projects		1	2	a1,a2,b1,b2,c1,c2,d1,d2
	Final Exam		1	3	a1,a2,b1,b2,c1,c2
Number of Weeks /and Units Per Semester			**16**	**33**	

15- Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Software modeling assignment	2,4,5,6,9,10	10	10%	a1,a2,b1,b2,c1,c2,d1,d2
2	Quizzes	Two times randomly	5	5%	a1,a2,b1,b2,c1,c2
3	Mid-Term exam	8	20	20%	a1,a2,b1,b2,c1,c2
4	Course project (research and software modeling)	15	15	15%	a1,a2,b1,b2,c1,c2,d1,d2
5	Final Exam (practical)	16	50	50%	a1,a2,b1,b2,c1,c2
Total			**100%**	**100%**	

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16- Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Assignments in Part and Assembly Tools	a1,b1,c2,d2	4	2%
2	Assignments in Material	a1,a2,b1,b2,c1,c2,d2	5	2%
3	Assignments in Interaction, Constraints, Mesh	a1,a2,b1,b2,c1,c2,d1,d2	6	2%
4	Assignments in Load and Boundary Conditions	a1,a2,b1,c1,c2,d1,d2	11	2%
5	Assignments in Analysis and Results	a1,b1,c2,d1,d2	12	2%

17- Learning Resources and Facilities:

- Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (maximum two).

1. ABAQUS, User Assistance. Dassault Systèmes Simulia Corporation, Providence, Rhode Island, USA., 2019.
2. ABAQUS, Inc. (2005), ABAQUS/Explicit: Advanced Topics, Lecture 1 to 11.

2- Essential References.

- https://fdocuments.in/document/abaqus-lecture-notes.html
- https://www.coursehero.com/search/results/863847224/34d3d24d6fcdaca3c6/

3- Electronic Materials and Web Sites *etc*.

- Course material and additional study resources are provided via teacher. The online tutorial resources are available through YouTube website.

Educational and research Facilities and Equipment Required

Technology Resources

- (Data show, Smart Board, and Software).

Other Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

-None of the above.

18- Course Policies:

1. Class Attendance:
The students should have more than 75 % of attendance according to rules and regulations of the faculty.

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Program Specification

2.	**Tardy:** The students should respect the timing of attending the lectures. They should attend within 10 minutes from starting of the lecture.
3.	**Exam Attendance/Punctuality:** The student should attend the exam on time. The punctuality should be implemented according to rules and regulations of the faculty for midterm exam and final exam.
4.	**Assignments & Projects:** The assignment is given to the students after each chapter, the student has to submit all the assignments for checking on time.
5.	**Cheating:** If any cheating occurred during the examination, the student is not allowed to continue and he/she has to face the examination committee for enquires.
6.	**Plagiarism:** The student will be terminated from the Faculty, if one student attends the exam on another behalf according to the policy, rules and regulations of the university.
7.	**Other policies:** • All the teaching materials should be kept out the examination hall. • the mobile phone is not allowed. • There should be a respect between the student and his teacher.

Reviewed By	**Vice Dean for Academic Affairs and Post Graduate Studies Dr. Tarek A. Barakat** **Prof. Dr. Ahmed Alwathaf** **Dr. Mohammad Algorafi**
	Deputy Rector for Academic Affairs Dr. Ibrahim AlMutaa **Dr. Ahmed mujahed** **Dr. Munaser Alsubri**

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