Sana'a University
Faculty of Engineering
Mechanical Engineering Department
Mechanical Engineering Program

16. Course Specification of Engineering Mechanics - Dynamics

I. Course Identification and General Information:

1.	Course Title:	Engineering Mechanics – Dynamics				
2.	Course Code & Number:	BR006				
3.	Credit hours:	C.H				TOTAL CR. HRS.
		Th.	Seminar/Tu.	Pr	Tr.	
		2	-	2	-	3
4.	Study level/ semester at which this course is offered:	First Year – Second Semester				
5.	Pre –requisite (if any):	Engineering Mechanics - Statics				
6.	Co –requisite (if any):	Mathematics				
7.	Program (s) in which the course is offered:	Mechanical Engineering				
8.	Language of teaching the course:	English				
9.	Location of teaching the course:	Mechanical Engineering Department				
10.	Prepared By:	Prof.Dr.Eng. Mohammed Ahmed Al-Bukahiti				
11.	Date of Approval					

II. Course Description:

Dynamics is that branch of mechanics, which deals with the motion of bodies under the action of forces. This course provides fundamental concepts for most of engineering branches. The knowledge and abilities taught in this course are an essential prerequisite for subsequent courses involving dynamics; in particular mechanics of machines, machine design, and system dynamics and vibration. The course focuses on the physical/mathematical analysis of the kinematics and kinetics motion of particles. The formulation and solution of mechanics problems will help the students develop the ability of logical thinking and effective communication. A thorough comprehension of dynamics

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will provide one of the most useful and powerful tools for analysis in engineering. In each chapter, the complete theory and the method of analysis will be introduced in the beginning followed by solved examples and assignments.

III. Course Intended learning outcomes (CILOs) of the course		**Referenced PILOs**
a1	Understand and explain basic kinematics and kinetics concepts such as displacement, velocity, acceleration, relative motion, force, impulse and momentum, work and energy.	A1
a2	Express dynamic quantities as vectors in terms of Cartesian components, polar coordinates, and normal-tangential coordinates.	A4
b1	Identify the appropriate tools and analytical methods in solving the practical problems of dynamics.	B1
c1	Solve and discuss kinematics and kinetics problems involving rectilinear and curvilinear motions of particles.	C1
d1	Develop logical and creative thinking by defining their own methodologies for problem solution.	D1
d2	Use appropriate technology to retrieve, manage, analyze, and present information.	D5

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Understand and explain basic kinematics and kinetics concepts such as displacement, velocity, acceleration, relative motion, force, impulse and momentum, work and energy.	Active Lectures. Tutorials. Self-learning from textbooks.	Written tests Homework and written assignments
a2. Express dynamic quantities as vectors in terms of Cartesian components, polar coordinates, and normal-tangential coordinates.	Active Lectures. Tutorials. Self-learning from textbooks.	Written tests Homework and written assignments

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Identify the appropriate tools and analytical methods in solving the practical problems of dynamics.	Active Lectures. Tutorials. Interactive class discussions. Self-learning from textbooks.	Written tests. Homework and written assignments.

© Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Solve and discuss kinematics and kinetics problems involving rectilinear and curvilinear motions of particles.	Active Lectures. Tutorials. Interactive class discussions. Self-learning from textbooks.	Written tests. Homework and written assignments.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Develop logical and creative thinking by defining their own methodologies for problem solution.	Active Lectures. Tutorials. Interactive class discussions. Self-learning from textbooks.	Written tests. Homework and written assignments.
d2. Use appropriate technology to retrieve, manage, analyze, and present information.	Active Lectures. Tutorials. Interactive class discussions.	Written tests. Homework and written assignments.

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	Self-learning from textbooks.	

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1.	Introduction to Dynamics	a1, a2	- Basic Concepts - Newton's law - System of Units - Gravitation - Dimensions - Solving problems in dynamics	1	2
2.	Kinematics of Particles (Rectilinear Motion)	a1, a2, b1, c1, d1, d2	- Particle Motion - Choice of Coordinates - Velocity and Acceleration - Graphical Interpretation - Analytical Integration	1	2
3.	Kinematics of Particles (Plane Curvilinear Motion). Rectangular Coordinates (*x*-*y*)	a1, a2, b1, c1, d1, d2	- Velocity - Acceleration - Visualization of Motion - Vector Representation - Projectile Motion	1	2
4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n*-*t*)	a1, a2, b1, c1, d1, d2	- Velocity and Acceleration - Geometric Interpretation - Circular Motion	1	2

5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r*-□)	a1, a2, b1, c1, d1, d2	- Time derivatives of unit vectors - Velocity and Acceleration - Circular Motion	1	2
6.	Kinematics of Particles (Relative Motion)	a1, a2, b1, c1, d1, d2	- Choice of Coordinate System - Vector Representation	1	2
7.	Mid-term exam 1	a1, a2, b1, c1, d1, d2	- The first six lectures	1	2
8.	Constrained Motion of Connected Particles	a1, a2, b1, c1, d1, d2	- One degree of freedom - Two degrees of freedom	1	2
9.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	a1, a2, b1, c1, d1, d2	- Newton's Second Law - Equation of Motion - Rectilinear Motion	1	2
10.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	a1, a2, b1, c1, d1, d2	- Curvilinear Motion	1	2
11.	Kinetics of Particles (Work and Kinetic Energy)	a1, a2, b1, c1, d1, d2	- Definition of work, Calculation of Work, Example of work, Work and Curvilinear Motion - Principle of Work and Kinetic Energy - Power, Efficiency	1	2
12.	Kinetics of Particles (Potential Energy)	a1, a2, b1, c1, d1, d2	- Gravitational Potential Energy - Elastic Potential Energy - Work-Energy Equation	1	2

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13.	Mid-term exam 2	a1, a2, b1, c1, d1, d2	- Lecture 7 to Lecture 11	1	2
14.	Kinetics of Particles (Linear Impulse and Linear Momentum)	a1, a2, b1, c1, d1, d2	- Linear Impulse and Linear momentum - Conservation of Linear Momentum	1	2
15.	Kinetics of Particles (Special Applications)	a1, a2, b1, c1, d1, d2	- Impact, Direct Central Impact, Coefficient of Restitution - Energy Loss During Impact	1	2
16.	Final Exam			1	2
Number of Weeks /and Units Per Semester				**16**	**32**

B - Tutorial Aspect:

Order	Tasks/ Experiments	Number of Weeks	Contact hours	Learning Outcomes
1.	Introduction to Dynamics	**1**	**2**	a1, a2
2.	Kinematics of Particles (Rectilinear Motion)	**1**	**2**	a1, a2, b1, c1, d1, d2
3.	Kinematics of Particles (Plane Curvilinear Motion). Rectangular Coordinates (*x*-*y*)	**1**	**2**	a1, a2, b1, c1, d1, d2
4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n*-*t*)	**1**	**2**	a1, a2, b1, c1, d1, d2
5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r*-□)	**1**	**2**	a1, a2, b1, c1, d1, d2
6.	Kinematics of Particles (Relative Motion)	**1**	**2**	a1, a2, b1, c1, d1, d2
7.	Constrained Motion of Connected Particles	**1**	**2**	a1, a2, b1, c1, d1, d2
8.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	**1**	**2**	a1, a2, b1, c1, d1, d2

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9.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	**1**	**2**	a1, a2, b1, c1, d1, d2
10.	Kinetics of Particles (Work and Kinetic Energy)	**1**	**2**	a1, a2, b1, c1, d1, d2
11.	Kinetics of Particles (Potential Energy)	**1**	**2**	a1, a2, b1, c1, d1, d2
12.	Kinetics of Particles (Linear Impulse and Linear Momentum)	**1**	**2**	a1, a2, b1, c1, d1, d2
13.	Kinetics of Particles (Special Applications)	**1**	**2**	a1, a2, b1, c1, d1, d2
14.	General Revision	**1**	**2**	a1, a2, b1, c1, d1, d2
Number of Weeks /and Units Per Semester		**14**	**28**	

V. Teaching strategies of the course:

- Active Lectures.
- Tutorials.
- Interactive class discussions.
- Self-learning from textbooks.
- Exercises and Homework.
- Small group working.
- Problem based learning.
- Presentations

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1.	Introduction to Dynamics	a1, a2	1	
2.	Kinematics of Particles (Rectilinear Motion)	a1, a2, b1, c1, d1, d2	2	0.5
3.	Kinematics of Particles (Plane Curvilinear Motion). Rectangular Coordinates (*x*-*y*)	a1, a2, b1, c1, d1, d2	3	0.5

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4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n-t*)	a1, a2, b1, c1, d1, d2	4	0.5
5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r-*□)	a1, a2, b1, c1, d1, d2	5	
6.	Kinematics of Particles (Relative Motion)	a1, a2, b1, c1, d1, d2	6	0.5
7.	Constrained Motion of Connected Particles	a1, a2, b1, c1, d1, d2	8	0.5
8.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	a1, a2, b1, c1, d1, d2	9	0.5
9.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	a1, a2, b1, c1, d1, d2	10	
10.	Kinetics of Particles (Work and Kinetic Energy)	a1, a2, b1, c1, d1, d2	11	0.5
11.	Kinetics of Particles (Potential Energy)	a1, a2, b1, c1, d1, d2	12	0.5
12.	Kinetics of Particles (Linear Impulse and Linear Momentum)	a1, a2, b1, c1, d1, d2	13	0.5
13.	Kinetics of Particles (Special Applications)	a1, a2, b1, c1, d1, d2	14	0.5
	Total			5

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.	Written assignments.	1-13	7.5	5	a1, a2, b1, c1, d1, d2
2.	Homework and project.	1-14	7.5	5	a1, a2, b1, c1, d1, d2
3.	Written test: Mid-term exam 1	7	15	10	a1, a2, b1, c1, d1, d2

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4.	Written test: Mid-term exam 2	12	15	10	a1, a2, b1, c1, d1, d2
5.	Written test: Final Exam	16	105	70	a1, a2, b1, c1, d1, d2
6.	**Total**		**150**	**100%**	

VIII. Learning Resources:

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

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

1. J. L. Meriam, L. G. Kraige, 2014, Engineering Mechanics, Statics, 8th Edition, John Wiley Publisher.

2- Essential References.

1. R. C. Hibbeler, Kai Beng Yap, 2013, Engineering Mechanics, Statics, 13th Edition, Pearson Education South Asia Ltd.

3- Electronic Materials and Web Sites *etc*.

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IX. Course Policies:

1.	**Class Attendance:** -A student should attend not less than 75 % of total hours of the subject; 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 an approved statement from university Clinic
2.	**Tardy:** - For late in attending the class, the student will be initially notified. If he 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 one 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 & Projects:** - The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.

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5.	**Cheating**: - For cheating in exam, a student will be considered as failure. In case the cheating is repeated three times during his/her study the student will be disengaged 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 proved a plagiarism of a student, he will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair 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 my given directly to students using soft or hard copy

Reviewed By	**Vice Dean for Academic Affairs and Post Graduate Studies: Asst. Prof. Dr. Tarek A. Barakat** **President of Quality Assurance Unit: Assoc. Prof. Dr. Mohammed Algorafi** **Name of Reviewer from the Department: Assoc. Prof. Dr. Riyad Muharam**
	Deputy Rector for Academic Affairs Asst. Prof. Dr. Ibrahim AlMutaa **Assoc. Prof. Dr. Ahmed Mujahed** **Asst. Prof. Dr. Munasar Alsubri**

16. Template for Course Plan (Syllabus)of Engineering Mechanics – Statics

I. Information about Faculty Member Responsible for the Course:

Name of Faculty Member	Prof.Dr. Mohammed Ahmed Al-Bukhaiti	**Office Hours**					
Location& Telephone No.	University of Sana'a, Faculty of Engineering, +00967 777161416	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**

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E-mail	m.albukhati@eng-su.edu.ye m.albukhaiti@gmail.com						

II. Course Identification and General Information:

1.	**Course Title:**	Engineering Mechanics – Dynamics				
2.	**Course Number & Code:**	BR006				
3.	**Credit hours:**	C.H				Total
		Th.	Seminar/Tu.	Pr	Tr.	
		2	2	-	-	3
4.	**Study level/year at which this course is offered:**	First Year – Second Semester				
5.	**Pre –requisite (if any):**	Engineering Mechanics – Statics				
6.	**Co –requisite (if any):**	Mathematics				
7.	**Program (s) in which the course is offered**	Mechanical Engineering				
8.	**Language of teaching the course:**	English				
9.	**System of Study:**	Semesters				
10	**Mode of delivery:**	Lectures and Tutorials				
11	**Location of teaching the course:**	Mechanical Engineering Department				

III. Course Description:

Dynamics is that branch of mechanics, which deals with the motion of bodies under the action of forces. This course provides fundamental concepts for most of engineering branches. The knowledge and abilities taught in this course are an essential prerequisite for subsequent courses involving dynamics; in particular mechanics of machines, machine design, and system dynamics and vibration. The course focuses on the physical/mathematical analysis of the kinematics and kinetics motion of particles. The formulation and solution of mechanics problems will help the students develop the ability of logical thinking and effective communication. A thorough comprehension of dynamics will provide one of the most useful and powerful tools for analysis in engineering. In each chapter, the complete theory and the method of analysis will be introduced in the beginning followed by solved examples and assignments.

IV.ntended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop**:**

1. Understand and explain basic kinematics and kinetics concepts such as displacement, velocity, acceleration, relative motion, force, impulse and momentum, work and energy.
2. Express dynamic quantities as vectors in terms of Cartesian components, polar coordinates, and normal-tangential coordinates.
3. Identify the appropriate tools and analytical methods in solving the practical problems of dynamics.
4. Solve and discuss kinematics and kinetics problems involving rectilinear and curvilinear motions of particles.
5. Develop logical and creative thinking by defining their own methodologies for problem solution.
6. Use appropriate technology to retrieve, manage, analyze, and present information.

V. Course Content:

- Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact hours
1.	Introduction to Dynamics	- Basic Concepts - Newton's law - System of Units - Gravitation - Dimensions - Solving problems in dynamics	1st	2
2.	Kinematics of Particles (Rectilinear Motion)	- Particle Motion - Choice of Coordinates - Velocity and Acceleration - Graphical Interpretation - Analytical Integration	2nd	2
3.	Kinematics of Particles (Plane Curvilinear Motion).	- Velocity - Acceleration	3rd	2

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	Rectangular Coordinates (*x-y*)	- Visualization of Motion - Vector Representation - Projectile Motion		
4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n-t*)	- Velocity and Acceleration - Geometric Interpretation - Circular Motion	4th	2
5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r-*□)	- Time derivatives of unit vectors - Velocity and Acceleration - Circular Motion	5th	2
6.	Kinematics of Particles (Relative Motion)	- Choice of Coordinate System - Vector Representation	6th	2
7.	Mid-term exam 1	- The first six lectures	7th	2
8.	Constrained Motion of Connected Particles	- One degree of freedom - Two degrees of freedom	8th	2
9.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	- Newton's Second Law - Equation of Motion - Rectilinear Motion	9th	2
10.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	- Curvilinear Motion	10th	2
11.	Kinetics of Particles (Work and Kinetic Energy)	- Definition of work, Calculation of Work, Example of work, Work and Curvilinear Motion - Principle of Work and Kinetic Energy - Power, Efficiency	11th	2
12.	Mid-term exam 2	- Lecture 7 to Lecture 11	12th	2
13.	Kinetics of Particles (Potential Energy)	- Gravitational Potential Energy - Elastic Potential Energy - Work-Energy Equation	13th	2

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14.	Kinetics of Particles (Linear Impulse and Linear Momentum)	- Linear Impulse and Linear momentum - Conservation of Linear Momentum	14th	2
15.	Kinetics of Particles (Special Applications)	- Impact, Direct Central Impact, Coefficient of Restitution - Energy Loss During Impact	15th	2
16.	Final Exam		16th	2
Number of Weeks /and Units Per Semester			**16**	**32**

B – Tutorial Aspect:

Order	Topics List	Week Due	Contact Hours
1.	Introduction to Dynamics	1st	2
2.	Kinematics of Particles (Rectilinear Motion)	2nd	2
3.	Kinematics of Particles (Plane Curvilinear Motion). Rectangular Coordinates (*x*-*y*)	3rd	2
4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n*-*t*)	4th	2
5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r*-□)	5th	2
6.	Kinematics of Particles (Relative Motion)	6th	2
7.	Constrained Motion of Connected Particles	8th	2
8.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	9th	2
9.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	10th	2
10.	Kinetics of Particles (Work and Kinetic Energy)	11th	2
11.	Kinetics of Particles (Potential Energy)	12th	2
12.	Kinetics of Particles (Linear Impulse and Linear Momentum)	13th	2

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13.	Kinetics of Particles (Special Applications)	14th	2
14.	General Revision	15th	2
Number of Weeks /and Units Per Semester		**14**	**28**

VI. Teaching strategies of the course:

- Active Lectures.
- Tutorials.
- Interactive class discussions.
- Self-learning from textbooks.
- Exercises and Homework.
- Small group working.
- Problem based learning.
- Presentations

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1.	Introduction to Dynamics	a1, a2	1	
2.	Kinematics of Particles (Rectilinear Motion)	a1, a2, b1, c1, d1, d2	2	0.5
3.	Kinematics of Particles (Plane Curvilinear Motion). Rectangular Coordinates (*x-y*)	a1, a2, b1, c1, d1, d2	3	0.5
4.	Kinematics of Particles (Plane Curvilinear Motion). Normal and Tangential Coordinates (*n-t*)	a1, a2, b1, c1, d1, d2	4	0.5
5.	Kinematics of Particles (Plane Curvilinear Motion). Polar Coordinates (*r-*□)	a1, a2, b1, c1, d1, d2	5	
6.	Kinematics of Particles (Relative Motion)	a1, a2, b1, c1, d1, d2	6	0.5
7.	Constrained Motion of Connected Particles	a1, a2, b1, c1, d1, d2	8	0.5
8.	Kinetics of Particles (Equation of Motion) Rectilinear Motion	a1, a2, b1, c1, d1, d2	9	0.5
9.	Kinetics of Particles (Equation of Motion) Curvilinear Motion	a1, a2, b1, c1, d1, d2	10	
10.	Kinetics of Particles (Work and Kinetic Energy)	a1, a2, b1, c1, d1, d2	11	0.5
11.	Kinetics of Particles (Potential Energy)	a1, a2, b1, c1, d1, d2	12	0.5
12.	Kinetics of Particles (Linear Impulse and Linear Momentum)	a1, a2, b1, c1, d1, d2	13	0.5
13.	Kinetics of Particles (Special Applications)	a1, a2, b1, c1, d1, d2	14	0.5
	Total			**5**

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1.	Written assignments.	1-13	7.5	5
2.	Homework and project.	1-14	7.5	5

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3.	Written test: Mid-term exam 1	7	15	10
4.	Written test: Mid-term exam 2	12	15	10
5.	Written test: Final Exam	16	105	70
	Total		**150**	**100%**

IX. Learning Resources:

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

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

1. J. L. Meriam, L. G. Kraige, 2014, Engineering Mechanics, Statics, 8th Edition, John Wiley Publisher.

2- Essential References.

1. R. C. Hibbeler, Kai Beng Yap, 2013, Engineering Mechanics, Statics, 13th Edition, Pearson Education South Asia Ltd.

3- Electronic Materials and Web Sites *etc*.

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X. Course Policies:

1.	**Class Attendance:** -A student should attend not less than 75 % of total hours of the subject; 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 an approved statement from university Clinic
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17. Course Specification of Scientific English

I. Course Identification and General Information:						
1.	Course Title:	Scientific English.				
2.	Course Code & Number:	BR111.				
3.	Credit Hours:	C.H				TOTAL CR. HRS.
		Th.	Seminar/Tu.	Pr	Tr.	
		2	-	-	-	2
4.	Study level/ semester at which this course is offered:	Second Year-First Semester.				
5.	Pre –requisite (if any):	English I and English II.				
6.	Co –requisite (if any):	None.				
7.	Program (s) in which the course is offered:	Mechanical Engineering Program.				
8.	Language of teaching the course:	English Language.				
9.	Location of teaching the course:	Mechanical Engineering Department.				
10.	Prepared By:	Assoc. Prof. Dr. Abdul-Malik Momin.				
11.	Date of Approval					

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II. Course Description:

This course is designed to develop the communicative performance of Engineers who wish to improve their abilities in English when dealing with their staff, other managers, suppliers, external colleagues and other Engineers internally or internationally as needed, with the correct vocabulary, phrasing, appropriateness, context and style. The role of Technical English language on modern engineering education will be targeted. Most students need to write essays and reports for course work. Yet writing good academic English taking into account the terminologies is one of the most demanding tasks students face. Our English for Engineer courses can focus on widening the student's knowledge of engineering terminology or equally on building their confidence in using the correct language for the situation at hand. Before this context the students should be aware of Academic English taking into account the approach of writing using grammatical and structure of the grammar. After completing this course, students will be able to understand and apply the most common technical vocabulary in the area of Mechanical Engineering.

III. Alignments of the Course Intended learning outcomes (CILOs)		Referenced PILOs
a1	Classify general principles of academic writing and scientific techniques using basic grammar.	A2
a2	Express the main ideas related to the topics of writing with effect vocabulary.	A4
b1	Examine the effect of scientific writing in the management process using best essays.	B3
c1	Apply different techniques for writing a report in the area of Mechanical Engineering with special terminologies.	C1
d1	Assess to time factor for completion of different processes required in this course.	D4
d2	Cooperate effectively within the team in presenting the technical reports.	D5

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Classify general principles of academic writing and scientific techniques using basic grammar.	• Active Lectures.	• Written Exam. • Homework.
a2- Express the main ideas related to the topics of writing with effect vocabulary.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Examine the effect of scientific writing in the management process using best essays.	• Active Lectures. • Seminars. • Projects.	• Examination. • Homework. • Project Reports.

© Alignment 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 different techniques for writing a report in the area of Mechanical Engineering with special terminologies.	• Problem Based Learning.	• Presentations.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Assess to time factor for completion of different processes required in this course	• Team Work.	• Individual and Group Projects Reports.

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d2- team	Cooperate effectively within the in presenting the technical reports.	• Directed Self – Study.	• Presentations

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub -Topics List	Number of Weeks	Contact Hours
1.	Introduction to the Courses of English I and English II.	a1, a2.	• Fast Revision.	1	2
2.	The English Tense System.	a1, a2, b1.	• Present Tense. • Present Continuous Tense. • Present Perfect Tense. • Present Perfect Continuous Tense. • Past Tense. • Past Continuous Tense. • Past Perfect Tense. • Past Perfect Continuous Tense. • Future Tense. • Future Continuous Tense. • Future Perfect Tense. • Future Perfect Continuous Tense. • Active and Passive. • Using Nouns and Adjectives. • Abstract Nouns. • Types of Conjunctions.	2	4
3.	Specialized Terminologies	a1, a2, b1, c1, d1, d2.	• Basic Terminologies for Engineering Mechanics.	4	8

	in Mechanical Engineering.		• Basic Terminologies for Computer. • Basic Terminologies for Thermal System. • Basic Terminologies for Production Engineering and Design. • Basic Terminologies for Industrial Safety and Training. • Some Applied Cases: ▪ How to Read Piping and Instrumentation Diagrams? ▪ Electrical Power Equipment. ▪ Introduction to Process Control and Instrumentation. ▪ Flow of Fluids through Pipes, Fittings, Valves and Pumps.		
4.	Mid-Term Exam.	a1, a2, b1, c1.	• The First Three Chapters.	1	2
5.	Punctuation.	a1, a2, b1, d1, d2.	• Capitals. • Apostrophes. • Semi-Colons. • Commas. • Quotation Marks.	1	2
6.	Reports, Case Studies and Literature Reviews.	a1, a2, b1, c1, d1, d2.	• Writing Reports. • Case Studies. • Literature Review.	2	4
7	Background to Writing.	a1, a2, b1, c1, d1, d2.	• The Purpose of Academic Writing.	1	2

			• Common Types of Academic Writing. • The Format of Long and Short Writing Tasks.		
8.	Paraphrasing.	a1, a2, b1, c1, d1, d2.	• The Elements of Effective Paraphrasing. • Techniques for Paraphrasing.	1	2
9.	Organizing Paragraphs.	a1, a2, b1, c1, d1, d2.	• Paragraph Structure. • Development of Ideas. • Linking Paragraphs Together.	1	2
10.	Argument and Discussion.	a1, a2, b1, c1, d1, d2.	• Discussion Vocabulary. • Organization. • The Language of Discussion. • Providing Evidence.	1	2
11.	Final Exam.	a1, a2, b1, c1.	All the Chapters.	1	2
Number of Weeks /and Units Per Semester				**16**	**32**

V. Teaching Strategies of the Course:

- Active Lectures.
- Seminars.
- Projects.
- Problem Based Learning.
- Team Work.
- Directed Self –Study.

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1.	Group Activities.	a1, a2, b1, c1, d1, d2.	1-14	10
	Total			10

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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.	Group Activities.	Weekly	10	10 %	a1, a2, b1, c1, d1, d2.
2.	Mid-Term Exam.	8 th	10	10 %	a1, a2, b1, c1.
3.	Course File.	15 th	10	10 %	a1, a2, b1, c1, d1, d2.
4.	Final Exam.	16 th	70	70 %	a1, a2, b1, c1.
	Total:		**100**	**100 %**	

VIII. Learning Resources:

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

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

1. Alice Oshima and Ann Hogue, (2006), "Writing Academic English", Fourth Edition. Longman Academic Writing Series.
2. Eric H. Glendinning, Technology 1 and Technology 2, 2007, Oxford English for Careers New York, Oxford University Press.
3. Stephen Bailey, 2011, Academic Writing, A Handbook for International Students, Taylor & Francis or Routledge's Collection, London and New York.

2- Essential References.

1. Ibboston, Mark, (2009), "Professional English in Use (Engineering), Cambridge University Press.
2. Collins, Harpers, (1990), "Collins Cobuild English Grammar", Williams Collins Sons& Company, Ltd.

3- Electronic Materials and Web Sites *etc*.

1. www.techscribe.co.uk.
2. www.prc.dk.
3. En.wikipedia.org.
4. www.udemy.com.

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Reviewed By	**Vice Dean for Academic Affairs and Post Graduate Studies: Asst. Prof. Dr. Tarek A. Barakat** **President of Quality Assurance Unit: Assoc. Prof. Dr. Mohammed Algorafi** **Name of Reviewer from the Department: Assoc. Prof. Dr. Riyad Muharam**
	Deputy Rector for Academic Affairs Asst. Prof. Dr. Ibrahim AlMutaa **Assoc. Prof. Dr. Ahmed Mujahed** **Asst. Prof. Dr. Munasar Alsubri**

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