

Northern Technical University
Technical College of Kirkuk
Mechanical Power Techniques
Engineering Department



الجامعة التقنية الشمالية
الكلية التقنية كركوك
قسم هندسة تقنيات ميكانيك القوى

Course Description

Course Description (First Level)

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	English
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	Training courses for students to develop students' professional skills
8- Data of production /revision of this specification	2023/09/01
9-Amis of the Course .1	
8A- Introducing the student to the importance of English language in daily life	
8B- Introducing the student to types of vocabulary	
8C- Introducing the student the engineering vocabularies	
8D- Helping the students to use English his/her specialization.	
8E- Helping the students to use English to develop his skills	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A-1 The student knows to use the right word and its synonym in the right place.

A-2 The student learns to use English grammar.

A-3 The student learns to use define all what it related to his/her specialization.

B. Subject-specific skills

B1 – Writing research paper in English.

B2 – Learn to how to use English in seminars.

B3 – Learn how to do seminars in English.

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Data Show using.
3. Weekly tests.

C. Thinking Skills

C1 Work in a team spirit.

C2 He adheres to the ethics of the university institution.

C3 Receives and accepts knowledge.

C4 The student feels the responsibility placed on him

Teaching and Learning Methods

Theoretical lectures

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Developing the student's self-trust while speaking English.

D-2 The students acquire skills and information in different types in Engineering vocabulary.

D-3 The student acquires the knowledge of practical sides of the subject.

D-4 The student acquires the knowledge of using different for the subject.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2 theoretical	The student understands the lesson	Student life	Theoretical	Quiz
2	2 theoretical	The student understands the lesson	Student life	Theoretical	Quiz
3	2 theoretical	The student understands the lesson	Daily Routine	Theoretical	Quiz
4	2 theoretical	The student understands the lesson	People & the environment	Theoretical	Quiz
5	2 theoretical	The student understands the lesson	People & the environment	Theoretical	Quiz
6	2 theoretical	The student understands the lesson	Architecture	Theoretical	Quiz
7	2 theoretical	The student understands the lesson	Educations	Theoretical	Quiz
8	2 theoretical	The student understands the lesson	Technology	Theoretical	Quiz
9	2 theoretical	The student understands the lesson	Food drink and culture	Theoretical	Quiz
10	2 theoretical	The student understands the lesson	Food drink and culture + exam	Theoretical	Quiz
11	2 theoretical	The student understands the lesson	Cites of the word	Theoretical	Quiz
12	2 theoretical	The student understands the lesson	Cites of the word	Theoretical	Quiz
13	2 theoretical	The student understands the lesson	Brain power	Theoretical	Quiz
14	2 theoretical	The student understands the lesson	Staying alive	Theoretical	Quiz
15	2 theoretical	The student understands the lesson	Staying alive + exam	Theoretical	Quiz

12. Infrastructure

R. Harrison, acadmic Skills Level 1 students books. UK: Oxford, 2011.

13. Admissions

- 1- Encourage students to do seminars in English.
- 2- Encouraging the student to write articles in English.
- 3- Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This program specification provides a concise summary of the main features of the program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the program.

1. Teaching Institution	Northern Technical University - Engineering Technical College / Kirkuk
2. University Department/Centre	Mechanics Power Tech. Eng. Dep.
3. Course Title	Engineering Drawing Using AutoCAD
4. Title of Final Award	Bachelor of Engineering Mechanics Power Technologies
5. Modes of Attendance offered	Annual (Weekly attendance)
6. Accreditation	Accreditation Board for Engineering and Technology (ABET)
7. Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8. Date of production/revision of this specification	1 / 9 / 2023
9. Aims of the Program	1- Introducing the student to the importance of engineering drawing and its relationship to other engineering subjects.

- 2- Develop the student's mental abilities in drawing simple and complex shapes.
- 3- Expanding the horizons of the student's imagination of geometric shapes and identifying their components, parts, mechanics and their working principle

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. To familiarize the student with the importance of engineering drawing
- A2. To teach the student how to imagine geometric shapes
- A3. To distinguish the mechanical components and parts and their working principle

B. Subject-specific skills

- B1. To develop the student's mental ability to draw simple and complex shapes
- B2. The student learns how to develop a strategy and sequence for drawing and assembling and deconstructing geometric shapes
- B3. The student learns to draw geometrical projections and set geometric dimensions

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.
- 5- Using the computer in engineering drawing.

Assessment methods

- 1- Discussion and dialogue with students.
- 2- Attendance.
- 3- Written + practical exams.
- 4- Using the computer in drawing engineering drawings.

C. Thinking Skills

- C1. The student listens attentively to the teacher's explanation.
- C2. To take care of the student calm and class order.
- C3. To familiarize the student with the importance of engineering drawing and its relationship with other engineering subjects
- C4. Describe the importance of installing mechanical parts

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Using AutoCAD to draw complex shapes in various fields of work.

D2. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D3. Develop sound thinking methods and release potential energy

11. Course Structure

week	Hours	ILOS	Unit/module or topic title	Teaching method	Assessment Method
1	3	The student understands the lesson	Principles of drawing	practical lecture	Weekly exams
2	3	The student understands the lesson	Title Block	practical lecture	Weekly exams
3	3	The student understands the lesson	drawing geometric shapes the basic	practical lecture	Weekly exams
4-5	3	The student understands the lesson	Graphic Adjustments - Computer Graphics Aids	practical lecture	Weekly exams
6-8	3	The student understands the lesson	Geometric line-Types of engineering drawing lines-Geometric operations-Dimensional placement.	practical lecture	Weekly exams
9-10	3	The student understands the lesson	Orthographic Projections	practical lecture	Weekly exams
11	3	The student understands	Principle of First Angle Projection	practical lecture	Weekly exams

		ds the lesson			
12-13	3	The student understands the lesson	Principle of Thired Angle Projection	practical lecture	Weekly exams
14	3	The student understands the lesson	Put dimensions on perspective and projections.	practical lecture	Weekly exams
15	3	The student understands the lesson	The conclusion of a third projection from Two known locations.	practical lecture	Weekly exams

12. Infrastructure	
Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	1-Computer lab equipped with modern display equipment 2-Computer lab equipped with modern computers necessary for practical application.
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	1-AutoCAD Exercises - Sachidanand Jha. 2-Ashleigh Fuller, Antonio Ramirez, Douglas Smith - Technical Drawing with AutoCAD 2017-SDC Publications (2017)
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	Basic Mechanical Drawing website tutorials

13. Admissions	
Pre-requisites	
Maximum number of students	
50	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided . it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University
2- University Department /centre	Technical College Eng. of Kirkuk .Mechanics Power Tech. Eng. Dep
3-Course title	Electricity technology
4-title of final Award	Bachelor's degree in power engineering
5-Modes of Attendance offered	Class lectures
6-Accreditation	The student must be qualified to work in the ELECTRIC and be graduated from the department after completing four years of study in which he is eligible to obtain a Bachelor's degree in .Power Mechanical Technology Engineering
7-Other external influences	The student will be able to CONNECT DIFFERENT CIRCUIT
8- Data of production /revision of this specification	3/24/2024
9-Amis of the Course .1	
1- Connect electrical circuits and compare theoretical results with practical1.	
Introduce the student to understand electrical theories and prove them in practice	
2- Connect electrical circuits and compare theoretical results with practical1.	

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10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

1. To familiarize the student with the importance of The most important electrical principles
2. Learning Outcomes, Teaching, Learning and Assessment Methods

To distinguish the electrical components and parts and their working principle.

B.Subject-specific skills

B1.The student acquires connection, measurement, and fault knowledge skills

Teaching and Learning Methods

Theoretical and practical lectures.

2- Semester written exams.

3- Weekly tests/practical + written.

4- Pre and post questions.

5- Using modern methods on YouTube to consolidate ideas

C. Thinking Skills

C1. The student acquires connection, measurement, and fault knowledge skills .

Teaching and Learning Methods

Theoretical and practical lectures.

2- Semester written exams.

3- Weekly tests/practical + written.

4- Pre and post questions.

5- Using modern methods on YouTube to consolidate ideas

Assessment Methods
1- Discussion and dialogue with students. 2- Attendance. 3- Weekly tests: oral + written + practical. 4- Asking important questions that indicate the student's understanding
D. General and Transferable Skills (other skills relevant to employability and personal development) .D1- That the student listens attentively to the professor's explanation C2- The student should pay attention to the calm and order of the .classroom .C3- That the student recognizes the importance of electrical circuits C4- The student should describe the importance of the advantages and disadvantages of connecting electrical circuits .

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2	Theoretical lecture + Practical lecture	How to use measuring devices for the purpose of measuring (R, I, V)	The student understands the lesson	Weekly exams
2	2	Theoretical lecture + Practical lecture	Ohm's law Connecting resistors to mixed parallel	The student understands the lesson	Weekly exams
3	2	Theoretical lecture + Practical lecture	Kirchhoff's law for voltage and current	The student understands the lesson	Weekly exams
4	2	Theoretical lecture + Practical lecture	Applications of Kirchhoff's law	The student understands the lesson	Weekly exams
5	2	Theoretical lecture + Practical lecture	Thevenin Theory	The student understands the lesson	Weekly exams
6	2	Theoretical lecture + Practical lecture	Norton Theory	The student understands the lesson	Weekly exams
7	2	Theoretical lecture + Practical lecture	Tractorism Theory	The student understands the lesson	Weekly exams
8	2	Theoretical lecture + Practical lecture	Nodal theory	The student understands the lesson	Weekly exams
9	2	Theoretical lecture + Practical lecture	Series circuits consisting of a coil	The student understands the lesson	Weekly exams
10	2	Theoretical lecture + Practical lecture	Parallel circuits consisting of a coil	The student understands the lesson	Weekly exams
11	2	Theoretical lecture + Practical lecture	Series circuits consisting of a capacitor	The student understands the lesson	Weekly exams
12	2	Theoretical lecture + Practical lecture	Parallel circuits consisting of a capacitor	The student understands the lesson	Weekly exams
13	2	Theoretical lecture + Practical lecture	Resonant circuit	The student understands the lesson	Weekly exams
14	2	Theoretical lecture + Practical lecture	Applications of series circuits	The student understands the lesson	Weekly exams
15	2	Theoretical lecture + Practical lecture	Applications of parallel circuits	The student understands the lesson	Weekly exams

12. Infrastructure

Required reading:
 . CORE TEXTS
 . COURSE MATERIALS
 . OTHER

Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
Community -based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

COURSE SPECIFICATION

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1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Computer Application 4 MPE 020
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	Training courses for students to develop students' professional skills
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	
8A- Introducing the student to computer and its fundamentals	
8B- Introducing the student to computer's parts and their functions as well as operating system types	
8C- Helping the students to use the computer and its operating system	
8D- Helping the students to use Microsoft Word	
8E- Helping the students to use Microsoft Excel	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

- A-1 The student knows the working mechanism of the operating system.
- A-2 The student learns to use MS Word in a beneficial way.
- A-3 The student learns to use MS Excel in a beneficial way.

B. Subject-specific skills

- B1 – Creating documents according to certain specifications.
- B2 – Creating specified tables with medium level.
- B3 – Learn how MS Office applications work together.

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Data Show using.
3. Weekly tests.

C. Thinking Skills

- C1 Work in a team spirit.
- C2 He adheres to the ethics of the university institution.
- C3 Receives and accepts knowledge.
- C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Developing the student's ability to use the computer.

D-2 The students acquire the skills in using MS Word.

D-3 The student acquires the knowledge of practical sides of the subject.

D-4 The student acquires the knowledge of using different for the subject.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	1 theoretical 1 practical	The student understands the lesson	Introduction to the subject	Theroretical and practical	Quiz
2	1 theoretical 1 practical	The student understands the lesson	Identification of computer	Theroretical and practical	Quiz
3	1 theoretical 1 practical	The student understands the lesson	Applications of computer	Theroretical and practical	Quiz
4	1 theoretical 1 practical	The student understands the lesson	Operating systemss	Theroretical and practical	Quiz
5	1 theoretical 1 practical	The student understands the lesson	Windows operating system	Theroretical and practical	Quiz
6	1 theoretical 1 practical	The student understands the lesson	Introduction into Microsoft Word	Theroretical and practical	Quiz
7	1 theoretical 1 practical	The student understands the lesson	Using MS Word-1	Theroretical and practical	Quiz
8	1 theoretical 1 practical	The student understands the lesson	Using MS Word-2	Theroretical and practical	Quiz
9	1 theoretical 1 practical	The student understands the lesson	Using MS Word-3	Theroretical and practical	Quiz
10	1 theoretical 1 practical	The student understands the lesson	Using MS Word-4	Theroretical and practical	Quiz
11	1 theoretical 1 practical	The student understands the lesson	Using MS Excel-1	Theroretical and practical	Quiz
12	1 theoretical 1 practical	The student understands the lesson	Using MS Excel-2	Theroretical and practical	Quiz
13	1 theoretical 1 practical	The student understands the lesson	Using MS Excel-3	Theroretical and practical	Quiz
14	1 theoretical 1 practical	The student understands the lesson	Using MS Excel-4	Theroretical and practical	Quiz
15	1 theoretical 1 practical	The student understands the lesson	Cooperations between MS Word and MS Excel	Theroretical and practical	Quiz

12. Infrastructure

Required reading:
 . CORE TEXTS
 . COURSE MATERIALS

Computer Applications: The Beginner's Guide

. OTHER	
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions
<p>1- Encourage students to gain more skills using computer</p> <p>2- Encouraging the students to gain more information in coding languages.</p>
Maximum number of students
Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided . it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University
2- University Department /centre	Technical College Eng. of Kirkuk .Mechanics Power Tech. Eng. Dep
3-Course title	Mathematics
4-title of final Award	Bachelor's degree in power engineering
5-Modes of Attendance offered	Class lectures
6-Accreditation	The student must be qualified to work in the fields of refractories and be graduated from the department after completing four years of study in which he is eligible to obtain a Bachelor's degree in Power Mechanical Technology .Engineering
7-Other external influences	The student will be able to maintain and repair cooling devices
8- Data of production /revision of this specification	3/24/2024
9-aims of the Course .1	
Providing the student with a comprehensive, thorough, and up-to-date treatment of engineering mathematics	
Solving the mathematical equations to get the unknown variables, using matrices	
Giving an idea about limits and there engineering applications	
Providing the student with introduction to matrices and their calculations with the methods of solving simultaneous equation	
Providing the student with introduction to derivatives and methods of integrations	

Methods learning outcomes teaching, Learning and Assessment

A-Knowledge and Understanding

. - Concept and applications of Mathematics I

1. To provide students with a foundation in basic mathematical concepts, this foundation is essential for further studies in advanced mathematics and its applications.
2. To develop a foundation in mathematical concepts, principles, and problem-solving techniques.
3. To enhance logical reasoning, critical thinking, and analytical skills.
4. To promote mathematical literacy and numeracy among students.
5. To develop students' ability to analyze problems and apply mathematical principles to solve complex problems in various contexts.

Mathematics is essential for developing numerical literacy, which involves understanding and working with numbers, data, measurements, and calculations

Teaching and Learning Methods

Explanation on the board, showing educational videos, comparing examples
. with what suits our daily lives

C. Thinking Skills

C1. able to interpret scientific facts

C2-Solving problems related to Mathematics

C3- Urging students to work together by solving class assignments in groups

.C4- The student should be able to understand physical terms

Teaching and Learning Methods:

Explanation on the board, showing educational videos, comparing examples
with what is consistent with our daily lives

Assessment Methods:
.Daily exams, monthly exams, homework, and in-class assignments
D. General and Transferable Skills (other skills relevant to employability and personal development) Practical training: Practical exercises and assignments are an important .1 part of learning yoga. Opportunities should be provided to practice solving .questions. Act wisely and reinforce concepts Tutorials: Small group science lessons can provide additional support .2 and guidance for hobbyists. We can offer these sessions on problem solving and debugging techniques. They provide an interactive audience to ask questions to personal assistance. . Peer collaboration: Encouraging peer collaboration can be beneficial in physics. Students can work together on projects, share knowledge and exchange ideas. Collaborative activities promote teamwork, communication, and deeper understanding .of physics concepts Assessments: Regular assessments, such as quizzes, quizzes, or .4 programming

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3	To know the meaning of forces	Matrices and Determinants	Theoretical presentation	Explanation on the board
2	3	To know the effect of forces	Cramer's Rule	Theoretical presentation	Examples with YouTube
3	3	To know the difference between distance and displacement	Trigonometry	Theoretical presentation	Explanation on the board
4	3	To know the difference between distance and displacement	Graph of Equations	Theoretical presentation	Explanation on the board
5	3	What are the laws of average speed?	Vectors	Theoretical presentation	Examples with YouTube
6	3	What are the laws of instantaneous speed?	2D and 3D Vectors	Theoretical presentation	Explanation on the board
7	3	What are the laws of acceleration and its symbol?	Equations and Limits	Theoretical presentation	Explanation on the board
8	3	Memorize the three laws of motion	Application on Limits	Theoretical presentation	Examples with YouTube
9	3	Explain exceptions to Newton's law	Derivative Theory	Theoretical presentation	Explanation on the board
10	3	Fast bodies to which Newton's law does not apply	Chain Rule	Theoretical presentation	Explanation on the board
11	3	It applies to static objects	Inverse Functions	Theoretical presentation	Examples with YouTube
12	3	Applies to moving objects	Logarithmic and Exponential Derivatives	Theoretical presentation	Explanation on the board
13	3	Every action has an equal and opposite reaction	Conic Sections	Theoretical presentation	Explanation on the board
14	3	Weight law	Applications	Theoretical presentation	Examples with YouTube
15	3	The effect of friction on force	Integration	Theoretical presentation	Explanation on the board

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	periodicals
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided . it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University
2- University Department /centre	Technical College Eng. of Kirkuk .Mechanics Power Tech. Eng. Dep
3-Course title	Specialized physics
4-title of final Award	Bachelor's degree in power engineering
5-Modes of Attendance offered	Class lectures
6-Accreditation	The student must be qualified to work in the fields of refractories and be graduated from the department after completing four years of study in which he is eligible to obtain a Bachelor's degree in Power Mechanical Technology .Engineering
7-Other external influences	The student will be able to maintain and repair cooling devices
8- Data of production /revision of this specification	3/24/2024
9-aims of the Course .1	
1. To acquire a systematic body of physical knowledge and develop an understanding of the concepts, principles and applications of physics. In understanding the concepts & principles, then one can further education in physics	
2.To develop a scientific attitude by looking at issues systematically and applying systematic methods of (analysis (clear steps or procedures	
3. To develop a range of skills important for scientific investigation	
4.To stimulate curiosity, interest and enjoyment of physics through methods of inquiry and care for the environment. This will help in motivating the students because it is only a motivated person that spends more time on a subject and achieves more as a result. In science the best method of inquiry is the practical approach	
5.To develop an understanding on the consequences of physics on man and his environment such as communication, transport	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Method .

Knowledge of Physics: Students will develop a solid understanding of physics, including its applications and roles

Applying physics to projects: Students will be able to apply physics .2 knowledge to real-world projects, and demonstrate their ability to design and .implement specific requirements

3. Analyzing and improving physics: Students should be able to analyze physics for performance, and apply optimization techniques to improve these metrics

A-Knowledge and Understanding

. Explanation on the board, showing educational videos, comparing examples with what suits our daily lives

B.Subject-specific skills

able to interpret scientific facts

C2-Solving physics problems related to movement

C3- Urging students to work together by solving class assignments in groups

C4- The student should be able to understand physical terms.

Teaching and Learning Methods

able to interpret scientific facts

C2-Solving physics problems related to movement

C3- Urging students to work together by solving class assignments in groups

.C4- The student should be able to understand physical terms

C. Thinking Skills

C1. able to interpret scientific facts

C2-Solving physics problems related to movement

C3- Urging students to work together by solving class assignments in groups

.C4- The student should be able to understand physical terms

Teaching and Learning Methods:

Explanation on the board, showing educational videos, comparing examples with what is consistent with our daily lives

Assessment Methods:
.Daily exams, monthly exams, homework, and in-class assignments
D. General and Transferable Skills (other skills relevant to employability and personal development) Practical training: Practical exercises and assignments are an important .1 part of learning yoga. Opportunities should be provided to practice solving .questions. Act wisely and reinforce concepts Tutorials: Small group science lessons can provide additional support .2 and guidance for hobbyists. We can offer these sessions on problem solving and debugging techniques. They provide an interactive audience to ask questions to personal assistance. . Peer collaboration: Encouraging peer collaboration can be beneficial in physics. Students can work together on projects, share knowledge and exchange ideas. Collaborative activities promote teamwork, communication, and deeper understanding .of physics concepts Assessments: Regular assessments, such as quizzes, quizzes, or .4 programming

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3	To know the meaning of forces	Power	To know the meaning of forces	Explanation on the board
2	3	To know the effect of forces	the movement	To know the effect of forces	Examples with YouTube
3	3	To know the difference between distance and displacement	displacement	To know the difference between distance and displacement	Explanation on the board
4	3	To know the difference between distance and displacement	distance	To know the difference between distance and displacement	Explanation on the board
5	3	What are the laws of average speed?	Medium speed	What are the laws of average speed?	Examples with YouTube
6	3	What are the laws of instantaneous speed?	Instantaneous speed	What are the laws of instantaneous speed?	Explanation on the board
7	3	What are the laws of acceleration and its symbol?	Acceleration	What are the laws of acceleration and its symbol?	Explanation on the board
8	3	Memorize the three laws of motion	Laws of motion on a straight line with constant acceleration	Memorize the three laws of motion	Examples with YouTube
9	3	Explain exceptions to Newton's law	The first rule to which Newton's law does not apply	Explain exceptions to Newton's law	Explanation on the board
10	3	Fast bodies to which Newton's law does not apply	The second rule to which Newton's law does not apply	Fast bodies to which Newton's law does not apply	Explanation on the board
11	3	It applies to static objects	Newton's first law of motion	It applies to static objects	Examples with YouTube
12	3	Applies to moving objects	Newton's second law of motion	Applies to moving objects	Explanation on the board
13	3	Every action has an equal and opposite reaction	Newton's third law of motion	Every action has an equal and opposite reaction	Explanation on the board
14	3	Weight law	the weight	Weight law	Examples with YouTube
15	3	The effect of friction on force	Friction	The effect of friction on force	Explanation on the board

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Special requirements (include for example workshops ,periodicals,IT software ,Websites)

periodicals

Community -based facilities (include for example ,guest Lectures,intership,field,studies)	
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13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University:

College:

Department:

Date of Form Completion:

Dean's Name

Date: / /

Signature

**Dean's Assistant for
Scientific Affairs**

Date: / /

Signature

Head of Department

Date: / /

Signature

Quality Assurance and University Performance Manager

Date: / /

Signature

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programs.

1. Teaching Institution	Northern Technical University- Engineering Technical College /Kirkuk
2. University Department/Centre	Mechanical Power Tec. Eng. Dep
3. Course Title	Mechanical Engineering/static
4. Title of Final Award	Bachelor of Engineering Mechanics Power Technologies
5. Modes of Attendance offered	Pologna trac
6. Accreditation	Accreditation Board for Engineering and Technology (ABET
7. Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8. Date of production/revision of this specification	24/3/2024
9. Aims of the Course	
	<ul style="list-style-type: none">• for him Role prominent in building design Machines And the machines And devices And the number.

- Preparation research and studies To improve And development a job Devices.
- Gain Students Skill Scientific Empower them from to treat Problems in Devices Mechanical
- situation Proposals And the alternatives To develop Mechanical devices.

10.Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. That He recognizes requester on analysis Powers The influencer on the body moving
- A2. That Understands requester How finding center Speed And displacement and accelerate the body Mobile
- A3. That He learns requester finding Speed And accelerate Shells
- A4. That He distinguishes requester between Processes Mechanically For Stillness And the movement to Objects
- A5. That requester Understands principle Work And ability
- A6. That He recognizes requester on principle Vibration

B. Subject-specific skills

- B1. Solution Many from Problems Mechanical.
- B2. Accuracy And clarity And achievement With expression.
- B3 . Development Ability on Thinking Logical Sequential.
- B4. solution Questions not Stereotype require skills many.

Teaching and Learning Methods

Lectures , Laboratories And the workshops Training Summer ,Projects Graduation .

Assessment methods

Tests Daily , Exams Quarterly (theory +Process) - Discussion And dialogue with Students – Attendance - duties Home

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. development skills Mentality He managed The graduate from Benefit from the information that He learns it And skills that He acquires it And add it in service His requirements As an individual And in service Goals the society from where Development Social

And economic.

D2. acquisition some Skills in analysis Powers Influencer on the body Moving

D3. development Techniques thinking Intact.

Programe Structure.10

11. Course Structure					
week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 tetorial	The student understands the lesson	Principle information	Theroritcal and practical	Quiz
2	3 theoretical 2 tetorial	The student understands the lesson	Vector quantities and scalar quantities .2D resolve force	Theroritcal and practical	Quiz
3	3 theoretical 2 tetorial	The student understands the lesson	Represents forces along line .3D resolve force	Theroritcal and practical	Quiz
4	3 theoretical 2 tetorial	The student understands the lesson	Equilibrium. Dot product	Theroritcal and practical	Quiz
5	3 theoretical 2 tetorial	The student understands the lesson	Moment	Theroritcal and practical	Quiz
6	3 theoretical 2 tetorial	The student understands the lesson	transformation Powers And energy Latent: energy Latent - transformation energy	Theroritcal and practical	Quiz
7	3 theoretical 2 tetorial	The student understands the lesson	Impulse and Momentum - Principles of Linear Impulse and Momentum For a system of particles - linear momentum transform for a system of particles	Theroritcal and practical	Quiz
8	3 theoretical 2 tetorial	The student understands the lesson	Couple. Resultant	Theroritcal and practical	Quiz
9	3 theoretical 2 tetorial	The student understands the lesson	2D Equilibrium. 3D Equilibrium	Theroritcal and practical	Quiz
10	3 theoretical 2 tetorial	The student understands the lesson	Shock	Theroritcal and practical	Quiz
11	3 theoretical 2 tetorial	The student understands the lesson	Friction	Theroritcal and practical	Quiz
12	3 theoretical 2 tetorial	The student understands the lesson	Area Centroid under curve	Theroritcal and practical	Quiz
13	3 theoretical 2 tetorial	The student understands the lesson	principles Basic in science Mechanics	Theroritcal and practical	Quiz

14	3 theoretical 2 tetorial	The student understands the lesson	Area Centroid under curve Wight Centroid	Theroretical and practical	Quiz
15	3 theoretical 2 tetorial	The student understands the lesson	Moment of inertia for component areas	Theroretical and practical	Quiz
12. Awards and Credits					
Level/Year	Course or Module Code	Course or Module Title	Credit Rating	Bachelor Degree Requires (x) credits	

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

13. Personal Development Planning

14. Admission criteria .

15. Key sources of information about the Course

Kraige G. L. Meriam, .L. J
Engineering Mechanics

RC Hibbeler Engineering Mechanics
Statics

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University:

College:

Department:

Date of Form Completion:

Dean's Name

Date: / /

Signature

**Dean's Assistant for
Scientific Affairs**

Date: / /

Signature

Head of Department

Date: / /

Signature

Quality Assurance and University Performance Manager

Date: / /

Signature

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

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1. Teaching Institution	Northern Technical University- Engineering Technical College /Kirkuk
2. University Department/Centre	Mechanical Power Tec. Eng. Dep
3. Course Title	Mechanical Engineering/Dynamic
4. Title of Final Award	Bachelor of Engineering Mechanics Power Technologies
5. Modes of Attendance offered	
6. Accreditation	Accreditation Board for Engineering and Technology (ABET
7. Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8. Date of production/revision of this specification	24/3/2024
9. Aims of the Course	
	<ul style="list-style-type: none">• for him Role prominent in building design Machines And the machines And devices And the number.

- Preparation research and studies To improve And development a job Devices.
- Gain Students Skill Scientific Empower them from to treat Problems in Devices Mechanical
- situation Proposals And the alternatives To develop Mechanical devices.

10.Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. That He recognizes requester on analysis Powers The influencer on the body moving
- A2. That Understands requester How finding center Speed And displacement and accelerate the body Mobile
- A3. That He learns requester finding Speed And accelerate Shells
- A4. That He distinguishes requester between Processes Mechanically For Stillness And the movement to Objects
- A5. That requester Understands principle Work And ability
- A6. That He recognizes requester on principle Vibration

B. Subject-specific skills

- B1. Solution Many from Problems Mechanical.
- B2. Accuracy And clarity And achievement With expression.
- B3 . Development Ability on Thinking Logical Sequential.
- B4. solution Questions not Stereotype require skills many.

Teaching and Learning Methods

Lectures , Laboratories And the workshops Training Summer ,Projects Graduation .

Assessment methods

Tests Daily , Exams Quarterly (theory +Process) - Discussion And dialogue with Students – Attendance - duties Home

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. development skills Mentality He managed The graduate from Benefit from the information that He learns it And skills that He acquires it And add it in service His requirements As an individual And in service Goals the society from where Development Social

And economic.

D2. acquisition some Skills in analysis Powers Influencer on the body Moving

D3. development Techniques thinking Intact.

Programe Structure.10

11. Course Structure					
week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 tetorial	The student understands the lesson	Particle motion: continuous linear motion - linear motion	Theroritcal and practical	Quiz
2	3 theoretical 2 tetorial	The student understands the lesson	General curvilinear motion: rectangular compounds - Projectile movement - vertical and tangential components	Theroritcal and practical	Quiz
3	3 theoretical 2 tetorial	The student understands the lesson	the movement Absolute: two-particle analysis - the relative movement of two particles using translational axes	Theroritcal and practical	Quiz
4	3 theoretical 2 tetorial	The student understands the lesson	Work and Energy: Work - Principles of Work and Energy - Principles of Work and Energy of a Particle System	Theroritcal and practical	Quiz
5	3 theoretical 2 tetorial	The student understands the lesson	Ability And efficiency	Theroritcal and practical	Quiz
6	3 theoretical 2 tetorial	The student understands the lesson	transformation Powers And energy Latent: energy Latent - transformation energy	Theroritcal and practical	Quiz
7	3 theoretical 2 tetorial	The student understands the lesson	Impulse and Momentum - Principles of Linear Impulse and MomentumFor a system of particles - linear momentum transform for a system of particles	Theroritcal and practical	Quiz
8	3 theoretical 2 tetorial	The student understands the lesson	Shock	Theroritcal and practical	Quiz
9	3 theoretical 2 tetorial	The student understands the lesson	Rankine cycle regenerative single open feed water heater	Theroritcal and practical	Quiz

10	3 theoretical 2 tetorial	The student understands the lesson	Shock	Theroretical and practical	Quiz
11	3 theoretical 2 tetorial	The student understands the lesson	Vibration:Undamped vibration	Theroretical and practical	Quiz
12	3 theoretical 2 tetorial	The student understands the lesson	principles Basic in science Mechanics	Theroretical and practical	Quiz
13	3 theoretical 2 tetorial	The student understands the lesson	principles Basic in science Mechanics	Theroretical and practical	Quiz
14	3 theoretical 2 tetorial	The student understands the lesson	amounts Vector analysis Powers: The value is not Vector (Two-way analysis)D-2) - Analysis in three directions - (D-3) Position vector	Theroretical and practical	Quiz
15	3 theoretical 2 tetorial	The student understands the lesson	balance Molecule: System Powers Two-way – System Powers With a third trends	Theroretical and practical	Quiz

Level/Year	Course or Module Code	Course or Module Title	Credit Rating	12. Awards and Credits
				Bachelor Degree Requires (x) credits

13. Admissions
Pre-requisites
Maximum number of students

Maximum number of students

13. Personal Development Planning

14. Admission criteria .

15. Key sources of information about the Course

Kraige G. L. Meriam, .L. J Engineering Mechanics

RC Hibbeler Engineering Mechanics Statics

Course Description (Second Level)

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Thermodynamics 3 MPE 020
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	
8A- Introducing the student to steam procedures and cycles	
8B- Introducing the student to the use of steam tables and diagrams, in addition to mixtures of steam and gases, and compression in several stages.	
8C- Steady flow analysis of the compression process	
8D- Identify the ideal and practical cycle of the gas turbine	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

- A- 1 The student should know steam and gas turbines
- A-2 The student should know reciprocating compressors and their applications
- A-3 The student compares gas turbines and internal combustion engines
- A-4 It is able to rearrange the steam cycle to increase turbine efficiency

B.Subject-specific skills

- B1 - Helping the student to acquire analytical ability regarding applications of thermodynamics
- B2 - Helping the student to link the theoretical aspect with practical applications of power stations
- B3 - Helping the student distinguish the applications of both turbines and reciprocating compressors
- B-4 Helping the student to recognize the real gas laws and mixtures of gases

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

- C1 Work in a team spirit.
- C2 He adheres to the ethics of the university institution.
- C3 Receives and accepts knowledge.
- C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

- D-1 Equipping students to operate in steam and gas power plants
- D-2 Enhancing the learner's proficiency with internal combustion engines
- D-3 The learner will gain proficiency in thermodynamic system analysis.
- D-4. Understanding the true nature of gases and vapors in order to handle their practical applications

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 practical	The student understands the lesson	Steam overview	Theroretical and practical	Quiz
2	3 theoretical 2 practical	The student understands the lesson	Methods for measuring dryness fraction	Theroretical and practical	Quiz
3	3 theoretical 2 practical	The student understands the lesson	Vapor power cycles	Theroretical and practical	Quiz
4	3 theoretical 2 practical	The student understands the lesson	Carnot cycle	Theroretical and practical	Quiz
5	3 theoretical 2 practical	The student understands the lesson	Rankine cycle	Theroretical and practical	Quiz
6	3 theoretical 2 practical	The student understands the lesson	Rankine cycle with reheating	Theroretical and practical	Quiz
7	3 theoretical 2 practical	The student understands the lesson	Rankine cycle regenerative Single closed feed water heater	Theroretical and practical	Quiz
8	3 theoretical 2 practical	The student understands the lesson	Rankine cycle regenerative tow closed feed water heater	Theroretical and practical	Quiz
9	3 theoretical 2 practical	The student understands the lesson	Rankine cycle regenerative single open feed water heater	Theroretical and practical	Quiz
10	3 theoretical 2 practical	The student understands the lesson	Rankine cycle regenerative two open feed water heater	Theroretical and practical	Quiz
11	3 theoretical 2 practical	The student understands the lesson	Gas power cycle	Theroretical and practical	Quiz
12	3 theoretical 2 practical	The student understands the lesson	Brayton cycle	Theroretical and practical	Quiz
13	3 theoretical 2 practical	The student understands the lesson	Brayton cycle improvements	Theroretical and practical	Quiz
14	3 theoretical 2 practical	The student understands the lesson	Diesel cycle	Theroretical and practical	Quiz
15	3 theoretical 2 practical	The student understands the lesson	Otto cycle	Theroretical and practical	Quiz

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	Engineering thermodynamics, Fundamentals of engineering thermodynamics
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Thermodynamics 4 MPE 020
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	
8A- Introducing the student to gases and mixtures	
8B- Introducing the student to how to calculate the properties of mixed gases	
8C- Identify the types of reciprocating compressors and the parts that comprise them	
8D- Identify the procedures that take place inside reciprocating compressors and how to conduct design calculations for them	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

- A-1 The student knows pure gases and gases that consist of a mixture of more than one type
- A-2 The student knows how to find the thermodynamic properties of mixed gases
- A-3 The student should know the types of compressors, their features and advantages, and the most important differences between them
- A-4 The student should be able to perform design calculations for reciprocating compressors

B. Subject-specific skills

- B1 - Helping the student to acquire analytical ability regarding applications of thermodynamics
- B2 - Helping the student to link the theoretical aspect with practical applications of power stations
- B3 - Helping the student distinguish the applications of both pure gases and mixtures
- B-4 Helping the student identify the parts of reciprocating compressors

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

- C1 Work in a team spirit.
- C2 He adheres to the ethics of the university institution.
- C3 Receives and accepts knowledge.
- C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Developing the student's ability to work inside gas and steam power plants

D-2 Developing the student's ability to deal with ideal and real gas engines

D-3 The student acquires the skill of thermodynamic analysis of reciprocating compressors

D-4 Know the ideal methods that should be followed to reduce the energy consumed by reciprocating compressors

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 practical	The student understands the lesson	Thermodynamic properties and relationships, general relationships (dh, sd, cp, cv)	Theroritical and practical	Quiz
2	3 theoretical 2 practical	The student understands the lesson	Maxwell relations	Theroritical and practical	Quiz
3	3 theoretical 2 practical	The student understands the lesson	Maxwell relations	Theroritical and practical	Quiz
4	3 theoretical 2 practical	The student understands the lesson	Clapeyron relationship	Theroritical and practical	Quiz
5	3 theoretical 2 practical	The student understands the lesson	Derivation of the governing equations	Theroritical and practical	Quiz
6	3 theoretical 2 practical	The student understands the lesson	Real gas relationships, compression coefficient, equation of state for an ideal gas	Theroritical and practical	Quiz
7	3 theoretical 2 practical	The student understands the lesson	Gas mixing and combustion	Theroritical and practical	Quiz
8	3 theoretical 2 practical	The student understands the lesson	Dalton's law, molar ratio, volumetric analysis and mass analysis	Theroritical and practical	Quiz
9	3 theoretical 2 practical	The student understands the lesson	Reciprocating compressors, introduction to dynamic analysis	Theroritical and practical	Quiz
10	3 theoretical 2 practical	The student understands the lesson	Reciprocating compressors real flow chart, clearance volume, multistage compression	Theroritical and practical	Quiz
11	3 theoretical 2 practical	The student understands the lesson	Work calculation for reciprocating compressors	Theroritical and practical	Quiz
12	3 theoretical 2 practical	The student understands the lesson	Gas turbine types and speed charts	Theroritical and practical	Quiz
13	3 theoretical 2 practical	The student understands the lesson	The effect of friction on gas and steam turbine blades	Theroritical and practical	Quiz
14	3 theoretical 2 practical	The student understands the lesson	Comparison of gas and steam turbines	Theroritical and practical	Quiz
15	3 theoretical 2 practical	The student understands the lesson	Internal combustion engines overview	Theroritical and practical	Quiz

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Engineering thermodynamics,
Fundamentals of engineering
thermodynamics

Special requirements (include for example
workshops ,periodicals,IT software
,Websites)

Community –based facilities (include for
example ,guest
Lectures,intership,field,studies)

13. Admissions

- 1- Scientific trips to gas and steam power stations
- 2- Encouraging the student to review what science has achieved in the field
of thermodynamic applications

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided . It is supported by a specification for each course that contributes to the Course.

1-Teaching institution	Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3- Course title	Mechanical drawing
4- Title of final Award	Bachelor of Engineering Mechanics Power Technologies
5- Modes of Attendance offered	Simister (Weekly attendance) mpe205
6- Accreditation	Accreditation Board for Engineering and Technology (ABET)
7- Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2023/9/1
9-Amis of the Course	
9 – A - The student should be able to acquire the skill necessary to read technical drawings.	
9 – B - Knowledge of engineering symbols and terminology.	
9- C- Helping the student to know the standard specifications and drawing of assembled, simple and complex mechanical parts.	
9- D- Learn how to use a computer in mechanical drawing.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding :-

- A-1- Helping the student know the types of lines in mechanical drawing .
- A-2- Helping the student know how to draw simple and complex parts.
- A-3- Helping the student know how to connect and disassemble the parts.
- A-4- Helping the student know how to number the disassembled parts according to their sequence.

B.Subject-specific skills :-

- B -1- Helping the student to acquire the imaginative ability to draw geometric parts.
- B-2 - Helping the student to acquire the skill of imagining what practical reality requires.
- B-3 - Helping the student to acquire the skill of setting appropriate dimensions and measurements.
- B-4- Helping the student to acquire the skill of using the best and most accurate methods in design.

Teaching and Learning Methods

- 1- Lectures.
- 2- Use data show.
- 3-Using other illustrative means (computer, live models to approximate the idea)

Evaluation methods

- 1-Summary exams (quiz).
- 2-Quarterly and annual exams.
- 3-weekly posts.

C- Emotional and value-based goals :-

- C-1-Working as one team.
- C-2- Adheres to the ethics of the university institution.
- C-3- Receives and accepts knowledge.
- C-4- The student feels the responsibility placed on his shoulders.

Teaching and learning methods

- 1- Theoretical and practical lectures.
- 2- Training students in the studio.

Evaluation methods

- 1- Semester and final exams.
- 2- Brief exams (quiz).

D - General and qualifying transferable skills (other skills related to employability and personal development) :-

- D - 1 - Develops the student's work in the studio.
- D-2 - Develops the student's knowledge of how to draw mechanical parts from more than one angle.
- D-3 - The student acquires the ability to acquire appropriate alternatives
- D-4 - The student acquires skill in using modern drawing methods.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	1 theoretical 3 practical	The student understands the lesson	General Review	Theoretical and practical	Quiz
2	1 theoretical 3 practical	The student understands the lesson	Symbols - Terminology	Theoretical and practical	Quiz
3	1 theoretical 3 practical	The student understands the lesson	Bolts and nuts	Theoretical and practical	Quiz
4	1 theoretical 3 practical	The student understands the lesson	Bolts and nuts	Theoretical and practical	Quiz
5	1 theoretical 3 practical		exam		Quiz
6	1 theoretical 3 practical	The student understands the lesson	Key	Theoretical and practical	Quiz
7	1 theoretical 3 practical	The student understands the lesson	Pulleys	Theoretical and practical	Quiz
8	1 theoretical 3 practical	The student understands the lesson	Pulleys	Theoretical and practical	Quiz
9	1 theoretical 3 practical	The student understands the lesson	Pulleys	Theoretical and practical	Quiz
10	1 theoretical 3 practical	The student understands the lesson	Rivets	Theoretical and practical	Quiz
11	1 theoretical 3 practical	The student understands the lesson	Rivets	Theoretical and practical	Quiz
12	1 theoretical 3 practical	The student understands the lesson	Rivets	Theoretical and practical	Quiz
13	1 theoretical 3 practical		exam		Quiz
14	1 theoretical 3 practical	The student understands the lesson	Compatibilities and discrepancies	Theoretical and practical	Quiz
15	1 theoretical 3 practical	The student understands the lesson	Compatibilities and discrepancies	Theoretical and practical	Quiz

12. Infrastructure

Prescribed books and infrastructure

1- Engineering Drawing Using AutoCAD
2- Machine Drawing, Dr. K.L. Narayana,
Dr. P. Kanniah, K. Venkata Reddy

13- Course development plan

1- Learn about the latest methods used in mechanical drawing.
2- Use Solid Work program.

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1-Teaching institution	Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3- Course title	Mechanical drawing
4- Title of final Award	Bachelor of Engineering Mechanics Power Technologies
5- Modes of Attendance offered	Simister (Weekly attendance) mpe205
6- Accreditation	Accreditation Board for Engineering and Technology (ABET)
7- Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2023/9/1
9-Amis of the Course	
9 – A - The student should be able to acquire the skill necessary to read technical drawings.	
9 – B - Knowledge of engineering symbols and terminology.	
9- C- Helping the student to know the standard specifications and drawing of assembled, simple and complex mechanical parts.	
9- D- Learn how to use a computer in mechanical drawing.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding :-

- A-1- Helping the student know the types of lines in mechanical drawing .
- A-2- Helping the student know how to draw simple and complex parts.
- A-3- Helping the student know how to connect and disassemble the parts.
- A-4- Helping the student know how to number the disassembled parts according to their sequence.

B.Subject-specific skills :-

- B -1- Helping the student to acquire the imaginative ability to draw geometric parts.
- B-2 - Helping the student to acquire the skill of imagining what practical reality requires.
- B-3 - Helping the student to acquire the skill of setting appropriate dimensions and measurements.
- B-4- Helping the student to acquire the skill of using the best and most accurate methods in design.

Teaching and Learning Methods

- 1- Lectures.
- 2- Use data show.
- 3-Using other illustrative means (computer, live models to approximate the idea)

Evaluation methods

- 1-Summary exams (quiz).
- 2-Quarterly and annual exams.
- 3-weekly posts.

C- Emotional and value-based goals :-

- C-1-Working as one team.
- C-2- Adheres to the ethics of the university institution.
- C-3- Receives and accepts knowledge.
- C-4- The student feels the responsibility placed on his shoulders.

Teaching and learning methods

- 1- Theoretical and practical lectures.
- 2- Training students in the studio.

Evaluation methods

- 1- Semester and final exams.
- 2- Brief exams (quiz).

D - General and qualifying transferable skills (other skills related to employability and personal development) :-

- D - 1 - Develops the student's work in the studio.
- D-2 - Develops the student's knowledge of how to draw mechanical parts from more than one angle.
- D-3 - The student acquires the ability to acquire appropriate alternatives
- D-4 - The student acquires skill in using modern drawing methods.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	1 theoretical 3 practical	The student understands the lesson	General Review	Theroritcal and practical	Quiz
2	1 theoretical 3 practical	The student understands the lesson	Gears	Theroritcal and practical	Quiz
3	1 theoretical 3 practical	The student understands the lesson	Gears	Theroritcal and practical	Quiz
4	1 theoretical 3 practical	The student understands the lesson	Gears	Theroritcal and practical	Quiz
5	1 theoretical 3 practical		exam		Quiz
6	1 theoretical 3 practical	The student understands the lesson	Clearance fixtures	Theroritcal and practical	Quiz
7	1 theoretical 3 practical	The student understands the lesson	Operating signs and tables parts	Theroritcal and practical	Quiz
8	1 theoretical 3 practical	The student understands the lesson	Detailed drawing of advanced mechanical systems	Theroritcal and practical	Quiz
9	1 theoretical 3 practical	The student understands the lesson	Detailed drawing of advanced mechanical systems	Theroritcal and practical	Quiz
10	1 theoretical 3 practical	The student understands the lesson	Detailed drawing of advanced mechanical systems	Theroritcal and practical	Quiz
11	1 theoretical 3 practical	The student understands the lesson	Disassembly of mechanical parts	Theroritcal and practical	Quiz
12	1 theoretical 3 practical	The student understands the lesson	Disassembly of mechanical parts	Theroritcal and practical	Quiz
13	1 theoretical 3 practical	The student understands the lesson	Disassembly of mechanical parts	Theroritcal and practical	Quiz
14	1 theoretical 3 practical		exam		Quiz
15	1 theoretical 3 practical	The student understands the lesson	Pipes	Theroritcal and practical	Quiz

12. Infrastructure

Prescribed books and infrastructure

1- Engineering Drawing Using AutoCAD
2- Machine Drawing, Dr. K.L. Narayana, Dr. P. Kannaiah, K. Venkata Reddy

13- Course development plan

1- Learn about the latest methods used in mechanical drawing.
2- Use Solid Work program.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Strength of Materials
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	courses(Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	25 /3 / 2024
9-Amis of the Course .1	
1. To develop problem solving skills and understanding of power plant systems the application of techniques.	
2. To understand feed water, reheated and regenerator.	
3. This course deals with the basic concept of power plant.	
4. This is the basic subject for all power plant systems.	
5. To understand steam turbine and gas turbine problems.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills.

A2. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

B. Subject-specific skills

B1. To develop problem solving skills and understanding of strength of material and the application of techniques.

B2. To understand stress and strain in materials.

B3. This course deals with the basic concept of strength of material

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of strength of material.

C4. Describe the importance of materials practically

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Exam and weekly quiz

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy

11. Course Structure

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	4	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
2	4	The student understands the lesson	Stress and Strain—Axial Loading	Theoretical and practical	Weekly exams
3	4	The student understands the lesson	Torsion	Theoretical and practical	Weekly exams
4	4	The student understands the lesson	Pure Bending	Theoretical and practical	Weekly exams
5	4	The student understands the lesson	Pure Bending	Theoretical and practical	Weekly exams
6	4	The student understands the lesson	Analysis and Design of Beams for Bending	Theoretical and practical	Weekly exams
7	4	The student understands the lesson	Analysis and Design of Beams for Bending	Theoretical and practical	Weekly exams
8	4	The student understands the lesson	Shearing Stresses in Beams	Theoretical and practical	Weekly exams
9	4	The student understands the lesson	Shearing Stresses in Beams	Theoretical and practical	Weekly exams
10	4	The student understands the lesson	Transformations of Stress and Strain	Theoretical and practical	Weekly exams
11	4	The student understands the lesson	Transformations of Stress and Strain	Theoretical and practical	Weekly exams
12	4	The student understands the lesson	Deflection of Beams	Theoretical and practical	Weekly exams
13	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

13	4	The student understands the lesson	Deflection of Beams	Theoretical and practical	Weekly exams
14	4	The student understands the lesson	Columns	Theoretical and practical	Weekly exams
15	4	The student understands the lesson	Columns	Theoretical and practical	Weekly exams
16	4	The student understands the lesson	Preparatory week before the final Exam	Theoretical and practical	Weekly exams

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	Seminar session
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	<u>MECHANICS OF MATERIALS</u> (Ferdinand P. Beer)
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Engineering Materials
4-Title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills. 2. Field visits.
8- Data of production /revision of this specification	1 / 9 / 2023
9-Amis of the Course .1	
	1. Introduce engineering materials and establish its relative in mechanical Engineering.
	2. Develop the fundamental principles about engineering materials.
	3. Demonstrate how these are used in mechanical and engineering applications.
	4. Describe basic concepts of engineering materials and their properties.
	5. Learn the concepts of the engineering materials classes.
	6. Recognize the crystallographic defects.
	7. Recognize the casting defects.
	8. Ability to describe and evaluate the mechanical properties of engineering materials.
	9. Recognize the different types of binary alloys.

10. Learning Outcomes ,Teaching, Learning and Assessment Method

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills about engineering materials.

A2. The module will be achieved through classes, interactive tutorials and by considering types of simple examples involving some sampling activities that are interesting to the students that are related to the engineering materials.

B. Subject-specific skills

B1. Development problem solving skills and understanding of engineering materials concepts.

B2. The use of the engineering materials related documents that are provided to compatible the degree requirements.

B3. Analyzing the some engineering subjects according to the study results.

Teaching and Learning Methods

- 1- Theoretical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Formative assessments.
- 5- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of engineering materials concepts properties and tests.

C4. Implementation of mathematical exercises and problems.

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods
Quizzes Assignments Reports Examines
D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development. D2. Develop sound thinking methods and release potential energy.

11. Course Structure					
Week	Hours	ILOS	Unit/module or topic title	Teaching method	Assessment Method
1	2	The student understands the lesson	Crystalline structure for engineering materials.	Theoretical	Weekly exams
2	2	The student understands the lesson	Atomic packing factor and its calculation.	Theoretical	Weekly exams
3	2	The student understands the lesson	Crystallographic defects.	Theoretical	Weekly exams
4	2	The student understands the lesson	Solidification of ingots and casting defects.	Theoretical	Weekly exams
5	2	The student understands the lesson	Hardness methods measurements.	Theoretical	Weekly exams
6	2	The student understands the lesson	Tensile properties.	Theoretical	Weekly exams
7	2	The student understands the lesson	Stress-Strain curve.	Theoretical	Weekly exams
8	2	The student understands the lesson	Impact strength measurement measurements methods.	Theoretical	Weekly exams
9	2	The student understands the lesson	Binary alloys systems- Isomorphous system.	Theoretical	Weekly exams
10	2	The student understands the lesson	Eutectic system-type one.	Theoretical	Weekly exams
11	2	The student understands the lesson	Eutectic system-type two.	Theoretical	Weekly exams
12	2	The student understands the lesson	Iron-carbide phase diagram.	Theoretical	Weekly exams
13	2	The student understands the lesson	Carbon and alloy steels.	Theoretical	Weekly exams
14	2	The student understands the lesson	Aluminum and its alloys.	Theoretical	Weekly exams
15	2	The student understands the lesson	Copper and its alloys.	Theoretical	Weekly exams

12. Infrastructure

Required reading:
CORE TEXTS

“Materials Science and Engineering AN INTRODUCTION” by WILLIAM D. CALLISTER, JR., DAVID G. RETHWISCH

. COURSE MATERIALS	
. OTHER	
"Engineering Materials Technology" by W. Bolton	
"Essentials of Materials Science and Engineering" by Donald R. Askeland, Pradeep P. Fulay	

13. Admissions
Pre-requisites
Maximum number of students
50

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Quality Control
4-Title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills. 2. Field visits
8- Data of production /revision of this specification	1 / 9 / 2023
9-Amis of the Course .1	
	1. Implement quality standards.
	2. Assess quality of service delivered.
	3. Record information.
	4. Study causes of quality deviations.
	5. Acquainting the principle of statistic.
	6. Use the quality control charts.
	7. Understand the theory of probabilities and their using in quality control.

10. Learning Outcomes ,Teaching ,Learning and Assessment Method

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills about quality control.

A2. The module will be achieved through classes, interactive tutorials and by considering types of simple examples involving some sampling activities that are interesting to the students that are related to the quality control management.

B. Subject-specific skills

B1. Development of problem solving skills and understanding of quality control concepts.

B2. The use of the quality standard and procedures documents that is provided to employees in accordance with the organization policy.

B3. Analyzing the quality control study results.

B4. Introduce the consults to the related managers.

Teaching and Learning Methods

- 1- Theoretical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Formative assessments.
- 5- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of quality control concepts and managements.

C4. Implementation of mathematical exercises and problems.

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Quizzes

Assignments

Reports
Examines

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy.

11. Course Structure					
Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2	The student understands the lesson	Introduction and definition of quality control.	Theoretical	Weekly exams
2	2	The student understands the lesson	Introduction and definition of quality control.	Theoretical	Weekly exams
3	2	The student understands the lesson	Function and targets of quality control.	Theoretical	Weekly exams
4	2	The student understands the lesson	Function and targets of quality control.	Theoretical	Weekly exams
5	2	The student understands the lesson	Quality control costs.	Theoretical	Weekly exams
6	2	The student understands the lesson	Definition and an introduction to the principles of statistic.	Theoretical	Weekly exams
7	2	The student understands the lesson	Statistic parameters and methods.	Theoretical	Weekly exams
8	2	The student understands the lesson	Definition an introduction to quality control charts.	Theoretical	Weekly exams
9	2	The student understands the lesson	Quality control charts types.	Theoretical	Weekly exams
10	2	The student understands the lesson	Probability theory and quality control.	Theoretical	Weekly exams
11	2	The student understands the lesson	Probability theory and quality control.	Theoretical	Weekly exams
12	2	The student understands the lesson	Probability distribution.	Theoretical	Weekly exams
13	2	The student understands the lesson	Probability distribution.	Theoretical	Weekly exams
14	2	The student understands the lesson	Introduction to sampling plans.	Theoretical	Weekly exams
15	2	The student understands the lesson	Methods of sampling plans.	Theoretical	Weekly exams

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

"Introduction to Statistical Quality Control, Sixth Edition. Montgomery, Douglas, C.

1. Control Charts, Edward S. Smith	
2. Tools of Total Quality, P. Lyonnet	
Engineering Statistics and Quality Control, Irving W. Burr	

13. Admissions
Pre-requisites
Maximum number of students
50

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanical Power Tech. Eng. Dep.
3-Course title	Fluid Mechanics-1 MPE 207
4-title of final Award	Bachelor of Engineering Mechanical Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	
	1 - Helping the student understand the nature of fluids and their behavior at rest and in motion (flow).
	2 - Helping the student understand the physical properties of fluids (gases and liquids).
	3-Helping the student understand the types of pressures that arise from these fluids in the state of rest and in the state of flow.
	4-Helping the student understand the effect of the forces exerted by fluids on gates and dams.
	5. Helping the student understand the buoyant force resulting from the effect of fluids on floating and sinking -5 objects

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A- 1 - For the student to mention, for example, the physical properties of fluids.

A2- The student should know the difference between types of fluid flow.

A3- To distinguish between flow equations and their applications.

B.Subject-specific skills

B1 - An in-depth understanding of the properties of fluids and the effects of increasing pressures and temperatures on the behavior of fluids.

B2 - Understanding the practical applications in technology for fluid flow.

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

C1- The student's attendance at the lecture from the beginning.

C2- The student listens to the lecture and pays attention to what information is mentioned in it.

C3- The student must remain calm and interact with the lecture by paying attention and answering the teacher's questions.

C4- That the student believes in the importance of studying the subject of fluid mechanics and its great impact on his specialty.

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

The student acquires important information about fluid mechanics.

D2- The student's knowledge of the relationship of the topics of this subject with other subjects.

D3- The student's knowledge of the applied aspects of the subject's topics.

D4- The student acquires knowledge of using different sources for subject topics.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 practical	The student understands the lesson	Fluid characteristics	Theroretical and practical	Quiz
2	3 theoretical 2 practical	The student understands the lesson	Types of fluids	Theroretical and practical	Quiz
3	3 theoretical 2 practical	The student understands the lesson	Static fluid and types of pressures	Theroretical and practical	Quiz
4	3 theoretical 2 practical	The student understands the lesson	Pressure measurement and gauges	Theroretical and practical	Quiz
5	3 theoretical 2 practical	The student understands the lesson	Pressure forces	Theroretical and practical	Quiz
6	3 theoretical 2 practical	The student understands the lesson	Gates and dams	Theroretical and practical	Quiz
7	3 theoretical 2 practical	The student understands the lesson	Buoyant force (Archimedes principle)	Theroretical and practical	Quiz
8	3 theoretical 2 practical	The student understands the lesson	Fluid movement	Theroretical and practical	Quiz
9	3 theoretical 2 practical	The student understands the lesson	Continuity equation	Theroretical and practical	Quiz
10	3 theoretical 2 practical	The student understands the lesson	Bernoulli equation	Theroretical and practical	Quiz
11	3 theoretical 2 practical	The student understands the lesson	Energy equation	Theroretical and practical	Quiz
12	3 theoretical 2 practical	The student understands the lesson	Energy equation applications	Theroretical and practical	Quiz
13	3 theoretical 2 practical	The student understands the lesson	Representing energy change graphically	Theroretical and practical	Quiz
14	3 theoretical 2 practical	The student understands the lesson	Measurement of fluid flow	Theroretical and practical	Quiz
15	3 theoretical 2 practical	The student understands the lesson	Momentum equation	Theroretical and practical	Quiz

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Fluid mechanics /by Streeter
Elementary Fluid mechanics
/by Vennard

Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

Course Description (Third Level)

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Heat transfer/2
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Semester
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1-Training courses for students to develop their professional skills 2. Field visits
8- Data of production /revision of this specification	25/3/2024
9- Aims of the Course .1	Introducing the student to the general foundations of heat transfer and their theoretical and practical applications in power mechanical engineering techniques in power stations, renewable energy, and heat exchangers of all types and fields of use.

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A1: The student will be familiar with the principles of heat transfer by convection

A2: The student will be familiar with the use of experimental equations to obtain a transition temperature

A3: To become familiar with non-dimensional quantities in this field

A4: To become familiar with the types of heat exchangers

A5: Learn to design of heat exchangers

B.Subject-specific skills

B1- The student develops the ability to conduct practical tests on the devices

B2- The student learns to use measuring devices in scientific .investigations

B3- The student learns to express results using diagrams to link the relationship between variables

Teaching and Learning Methods

1. Theoretical and practical lectures
2. Weekly tests / written + practical
3. Submit reports
4. Asking questions during lectures

C. Thinking Skills

C1- The student to listen carefully to the professor's explanation

C2- The student to maintain calm and order in the classroom

C3- The student should recognize the importance of heat transfer

C4- To teach the student to design thermal systems that carry convection

Evaluation methods

1. Discussion and dialogue with the student
2. Attendance
3. Weekly tests: oral + written + practical

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- The student must be able to design thermal systems such as heat exchangers and solar energy systems

D2- The student will have the ability to conduct practical tests on devices related to refractories

D3- Use specialized software in the field of heat transfer

11. Course Structure

week	Hours Theoretical + Practical	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
First	3+2	The student understands the lesson	Principles of convection heat transfer	Theoretical lecture + practical test	Weekly exams + report submission
Second	3+2	The student understands the lesson	Forced convection heat transfer equations under steady-state conditions and one dimension	Theoretical lecture + practical test	Weekly exams + report submission
Third- Fourth	3+2	The student understands the lesson	Analytical solution for laminar and turbulent forced convection heat transfer	Theoretical lecture + practical test	Weekly exams + report submission
Fifth	3+2	The student understands the lesson	Bulk temperature and non-dimensional quantities	Theoretical lecture + practical test	Weekly exams + report submission
Sixth - seventh	3+2	The student understands the lesson	Empirical relations for laminar and turbulent forced convection heat transfer	Theoretical lecture + practical test	Weekly exams + report submission
Eight	3+2	The student understands the lesson	Natural convection heat transfer	Theoretical lecture + practical test	Weekly exams + report submission
Ninth - Tenth	3+2	The student understands the lesson	Empirical relations for natural convection	Theoretical lecture + practical test	Weekly exams + report submission
Eleventh	3+2	The student understands the lesson	Introduction to heat exchangers, their types and features	Theoretical lecture + practical test	Weekly exams + report submission
Twelfth	3+2	The student understands the lesson	Overall heat transfer coefficient and fouling factor	Theoretical lecture + practical test	Weekly exams + report submission
thirteenth	3+2	The student understands the lesson	Log mean temperature difference (LMTD) method	Theoretical lecture + practical test	Weekly exams + report submission
Fourteenth - fifteenth	3+2	The student understands the lesson	Effectiveness - NTU method	Theoretical lecture + practical test	Weekly exams + report submission

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	Heat Transfer text books Seminars
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	Practical tests
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	https://www.smore.com/n/ybz4f-convection-conduction-radiation

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

Course description

This course description provides a summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the learning opportunities available. It must be linked to the program ; .description

technical College Engineering / Kirkuk	1 Educational institution .
Mechanical Technology Engineering Department Powers	2 / Scientific department . center
Engineering analysis and numerical methods /MPE 0302	3 Course name/code .
(theoretical)	4 Available attendance forms .
annual	5 Semester/year .
90 theoretical	6 Number of study . hours (total)
2024/26/3	7 Date this description was . prepared
8 Course objectives .	
<p>,The course aims to teach the student solutions to ordinary and partial differential equations ,their applicationsFourier series, and transformationsLaplace and matrices, as well as numerical methods, linear interpolation, numerical integration, solutions of nonlinear equations, and finally</p> <p>Finite Element Method Finite element method</p>	

11 . Course structure					. 10
Evaluation method	road education	Name of the unit/topic	Required learning outcomes	hours	the week
Daily evaluation	Class lectures	Ordinary differential equations - first order	Teaching the student solutions to ordinary differential equations	5	1
Daily evaluation	Class lectures	Ordinary difference equations - first order	Teaching the student solutions to ordinary differential equations	5	2
Daily evaluation	Class lectures	Applications of first order differential equations: orthogonal trajectories & series circuits	Teaching the student solutions to ordinary differential equations and their applications	5	3
Daily evaluation	Class lectures	Applications of first order differential equations: salt concentration in tanks & Newton's law of cooling +quiz	Teaching the student solutions to ordinary differential equations and their applications	5	4
Daily evaluation	Class lectures	Ordinary differential equations - second order	Teaching the student solutions to ordinary differential equations	5	5
Daily evaluation	Class lectures	Applications of second order differential equations: simple harmonic motion of spring	Teaching the student solutions to ordinary differential	5	6

			equations and their applications		
Daily evaluation	Class lectures	Applications of second order differential equations: Damped Motion	Teaching the student solutions to ordinary differential equations and their applications	5	7
Daily evaluation	Class lectures	Fourier series: periodic functions+quiz	Teaching students solutions to Fourier series equations	5	8
Daily evaluation	Class lectures	Even, Odd functions and Half range expansion	Teaching the student solutions to equations Even, Odd functions and Half range expansion	5	9
Daily evaluation	Class lectures	Partial differential equations	Teaching the student solutions to partial differential equations	5	10
Daily evaluation	Class lectures	Applications of partial differential equations: heat conduction equation & wave equation	Teaching the student solutions to partial differential equations and their applications	5	11
Daily evaluation	Class lectures	Laplace transformation +quiz	Teaching students solutions to transformations Laplace	5	12

Daily evaluation	Class lectures	Matrices: Gauss elimination method, Gauss-Siedel method and Cholesky's method	Empowering the student to solve Matrices: Equations Gauss elimination method, GaussSiedel method and Cholesky's method	5	13
Daily evaluation	Class lectures	Matrices: Gauss elimination method, Gauss-Siedel method and Cholesky's method+quiz	Empowering the student to solve Matrices: Equations Gauss elimination method, GaussSiedel method and Cholesky's method	5	14
Mid-year exam					
Daily evaluation	Class lectures	Introduction to numerical methods : Difference table	Give an introduction to numerical methods	5	1
Daily evaluation	Class lectures	Linear interpolation: Newton-Gregory & Lagrange interpolating polynomial	Enabling the student to solve : equations Linear interpolation: Newton-Gregory & Lagrange interpolating polynomial	5	2
Daily evaluation	Class lectures	Numerical integration: Trapezoidal and Simpson's rules	Teaching the student to solve numerical integration equations	5	3
Daily evaluation	Class lectures	Numerical integration: Trapezoidal and Simpson's rules+quiz	Teaching the student to solve numerical integration equations	5	4
Daily evaluation	Class lectures	Solution of non-linear equations: Newton-Raphson method	Enabling the student to solve nonlinear equations	5	5

Daily evaluation	Class lectures	Numerical solution of ODE: Taylor series	The student knows how to solve Equations Numerical solution of ODE: Taylor series	5	6
Daily evaluation	Class lectures	Euler method & Modified Euler method	Empowering the student to solve Equations Euler method & Modified Euler method	5	7
Daily evaluation	Class lectures	Runge- Kutta method+quiz	Empowering the student to solve Equations Runge- Kutta method +quiz	5	8
Daily evaluation	Class lectures	Finite Element Method	Enable the student to solve finite element method equations Element Method	5	9

تقييم يومي	محاضرات صفية	Finite Element Method	تمكين الطالب على حل معادلات طريقة العناصر المحددة Finite Element Method	5	10
تقييم يومي	محاضرات صفية	Review about second term subjects		5	11

12. البنية التحتية

1. Advanced Engineering Mathematics, E. Kreyszig. 2. Advanced Mathematics for Engineers, W. Ertel.	1- الكتب المقررة المطلوبة
1. Fundamentals of Differential Equations, Nagle. Staff. Snider, 8 th Editions. 2. Numerical Methods of Engineers, Chapra & Canale, 6 th Edition. 3. Applied Numerical Analysis, Gerald & Wheatley, 7 th Edition	2- المراجع الرئيسية (المصادر)
محاضرات	ا- الكتب والمراجع التي يوصى بها المجلات العلمية , التقارير , (
محاضرات معدة مسبقا توزع على الطلبة	ب - المراجع الالكترونية, مواقع الانترنت

13. خطة تطوير المقرر الدراسي

استخدام مفردات المحاضرة المقررة والاستعانة بمصادر علمية اخرى بهدف توضيح وتبسيط المادة الدراسية للطلبة.



TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Mechanical Design
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	courses(Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	25 /3 / 2024
9-Amis of the Course .1	
1. To develop problem solving skills and understanding of design of standard mechanical parts.	
2. To understand simple stress, combined stress, and variable stress in machine parts.	
3. To understand how to select suitable materials for machine parts.	
4. To understand how to deals with standard parts and tables.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills.

A2. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

B. Subject-specific skills

B1. To develop problem solving skills and understanding of machine parts design and the application of techniques.

B2. To understand simple stress and combined stress in machine parts.

B3. This course deals with the standard parts and tables.

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of strength of material.

C4. Describe the importance of materials practically

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Exam and weekly quiz

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy

11. Course Structure

First Course

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1-2	8	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
3-4	8	The student understands the lesson	Simple stress in machine parts	Theoretical and practical	Weekly exams
5-6	8	The student understands the lesson	Combined stress in machine parts	Theoretical and practical	Weekly exams
7-10	16	The student understands the lesson	Variable stress in machine parts	Theoretical and practical	Weekly exams
11-12	8	The student understands the lesson	Design of riveted joints	Theoretical and practical	Weekly exams
13-15	12	The student understands the lesson	Design of screwed joints	Theoretical and practical	Weekly exams

Second course

1-4	16	The student understands the lesson	Design of power transmission shafts	Theoretical and practical	Weekly exams
5-6	8	The student understands the lesson	Design of shaft keys	Theoretical and practical	Weekly exams
7-9	12	The student understands the lesson	Design of flange coupling	Theoretical and practical	Weekly exams
10-12	12	The student understands the lesson	Design of pressure vessels	Theoretical and practical	Weekly exams
13-15	12	The student understands the lesson	Design of power screws	Theoretical and practical	Weekly exams

. Course Structure11

13	4	The student understands the lesson	Deflection of Beams	Theoretical and practical	Weekly exams
14	4	The student understands the lesson	Columns	Theoretical and practical	Weekly exams
15	4	The student understands the lesson	Columns	Theoretical and practical	Weekly exams
16	4	The student understands the lesson	Preparatory week before the final Exam	Theoretical and practical	Weekly exams

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Seminar session

Special requirements (include for example workshops ,periodicals, IT software ,Websites)

MECHANICS OF MATERIALS
(Ferdinand P. Beer)

Community –based facilities (include for example ,guest Lectures,intership,field,studies)

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	mpe311 /Gas dynamics
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2023/9/1
9-Amis of the Course	
9a- Introduce the student to invasive procedures and courses ⁸	
9b- Introducing the student to the use of gas tables and charts	
9c- Steady-flow analysis of the compression process ⁸	
9d- Helping the student to understand the types of compressible that arise from these fluids in the state laminar flow, turbulent flow.	

10. Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

- A-1 The student should mention, for example, the physical properties of fluids
- A-2 The student knows the difference between types of fluid flow
- A-3 For the student to compare the types of fluids

B. Subject-specific skills

- B1 - An in-depth understanding of the properties of fluids and the effects of increasing pressures and temperatures on the behavior of fluids.
- B2 - Understanding the practical applications in fluid flow technology

Teaching and Learning Methods

- 1 -Lectures
- 2- Use Data Show
- 3- Using other means of explanation (laboratory experiments)

Assessment Methods

- 1- Summary exams (Quiz)
- 2- Monthly and semester examinations.
- 3-Weekly contributions.

C- Emotional and Values-based goals

- C-1 Working as a team.
- C-2 Adheres to the ethics of the university institution.
- C-3 Receives and accepts knowledge.
- C-4 The student feels the responsibility placed on him.

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D - General and qualifying transferable skills (other skills related to employability and personal development)

D-1 - Developing the student's ability to work inside gas and steam power plants

D-2 - Developing the student's ability to handle combustion engines

D-3- The student acquires the skill of thermodynamic analysis of various systems

D-4 - Knowing the real behavior of steam and gases for the purpose of dealing with their practical applications

11-Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2 theoretical 2 practical	The student understands the lesson	Introduction to Compressible Flow	Theroritical and practical	Quiz
2	2 theoretical 2 practical	The student understands the lesson	Types of fluids and their characteristics	Theroritical and practical	Quiz
3	2 theoretical 2 practical	The student understands the lesson	Conservation of mass	Theroritical and practical	Quiz
4	2 theoretical 2 practical	The student understands the lesson	Conservation of energy	Theroritical and practical	Quiz
5	2 theoretical 2 practical	The student understands the lesson	Conservation of Momentum	Theroritical and practical	Quiz
6	2 theoretical 2 practical	The student understands the lesson	Thermodynamics Relations	Theroritical and practical	Quiz
7	2 theoretical 2 practical	The student understands the lesson	Thermodynamics Relations + exam	Theroritical and practical	Quiz
8	2 theoretical 2 practical	The student understands the lesson	Isentropic Flow of Perfect Gas	Theroritical and practical	Quiz
9	2 theoretical 2 practical	The student understands the lesson	Isentropic Flow in a Converging Nozzle	Theroritical and practical	Quiz
10	2 theoretical 2 practical	The student understands the lesson	Isentropic Flow in Converging-Diverging Nozzle	Theroritical and practical	Quiz
11	2 theoretical 2 practical	The student understands the lesson	Thrust force of a rocket engine	Theroritical and practical	Quiz
12	2 theoretical 2 practical	The student understands the lesson	Normal shock wave	Theroritical and practical	Quiz
13	2 theoretical 2 practical	The student understands the lesson	Normal Shock Wave + exam	Theroritical and practical	Quiz
14	2 theoretical 2 practical	The student understands the lesson	Fanno flow part 1	Theroritical and practical	Quiz
15	2 theoretical 2 practical	The student understands the lesson	Fanno flow part 2	Theroritical and practical	Quiz

12.Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

James John & Thie Keith,
Gas dynamics, 3td edition,
Pearson prentice hall, Upper
.Saddle, New Jersey, 2006
Robert D. Zucker & Oscar
Biblarz , Fundamental of Gas
Dynamics, John Wily &
Sons, New York, 2002

منذر اسماعيل الدروبي، مبادئ
ديناميك الغازات، بغداد، وزارة التعليم
العالي و البحث العلمي،

13. Curriculum Development Plan

- 1- Scientific trips to gas and steam power stations
- 2- Encouraging the student to familiarize himself with what science has reached in the field of thermodynamic applications

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Internal Combustion Engines
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2023/09/01
9-Amis of the Course .1	
8a- Introducing the student to the classification of equipment	
8b- The students of the Department of Power Mechanics Engineering build strong foundations through their work on various axes related to the manufacture of stations, their designs, and their future prospects, as well as studying the various types of stations and learning about the foundations of their work.	
8c- Analysis of the steady flow of the compression process	
8d- Identify the basic cycles of engines and the internal combustion process of engines	

10 . Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

A-1 The student learns internal and external combustion engines

A-2 The student learns engines and their applications

A-3 The student can compare diesel engines and gasoline engines

A-4 The student will be able to rearrange the engines in order to increase the efficiency of the engines

Subject-specific skills

B1 - Helping the student to acquire analytical ability regarding internal combustion engines

B2 - Helping the student on the theoretical side of commercial transactions

B3 - Help the student identify the applications of both coastal bio engines and two-stroke vehicle engines

B-4 Helping the student to become familiar with the laws of fuel and mixtures of gases

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

C1 Work in a team spirit.

C2 He adheres to the ethics of the university institution.

C3 Receives and accepts knowledge.

C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.

2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Equipping students to operate in steam and gas power plants

D-2 Enhancing the learner's proficiency with internal combustion engines

D-3 The learner will gain proficiency in thermodynamic system analysis.

D-4. Understanding the true nature of gases and vapors in order to handle their practical applications

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2 theoretical 2 practical	The student understands the lesson	On road and off-road equipment classification and components	Theroretical and practical	Quiz
2	2 theoretical 2 practical	The student understands the lesson	Basic Engines & cycles(CI, Ci Duel cycles)	Theroretical and practical	Quiz
3	2 theoretical 2 practical	The student understands the lesson	Operations caracaras of Engine Parameters (Work, mean effective pressure, Torque	Theroretical and practical	Quiz
4	2theoretical 2 practical	The student understands the lesson	Power, thermal & Volumetric efficiency, Specific Fuel Consumptions)	Theroretical and practical	Quiz
5	2 theoretical 2 practical	The student understands the lesson	Ideal engine cycle	Theroretical and practical	Quiz
6	2 theoretical 2 practical	The student understands the lesson	real engine cycle	Theroretical and practical	Quiz
7	2 theoretical 2 practical	The student understands the lesson	Compressions Injection Engine-1	Theroretical and practical	Quiz
8	2 theoretical 2 practical	The student understands the lesson	Compressions Injection Engine-2	Theroretical and practical	Quiz
9	2 theoretical 2 practical	The student understands the lesson	Compressions Injection Engine-3	Theroretical and practical	Quiz
10	2 theoretical 2 practical	The student understands the lesson	Spark injections-1	Theroretical and practical	Quiz
11	2 theoretical 2 practical	The student understands the lesson	Spark injections-2	Theroretical and practical	Quiz
12	2 theoretical 2 practical	The student understands the lesson	Spark injections-3	Theroretical and practical	Quiz
13	2 theoretical 2 practical	The student understands the lesson	Rotary Engines-1	Theroretical and practical	Quiz
14	2 theoretical 2 practical	The student understands the lesson	Rotary Engines-2	Theroretical and practical	Quiz
15	2 theoretical 2 practical	The student understands the lesson	Rotary Engines-3	Theroretical and practical	Quiz

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	-A Textbook Internal Combustion Engines (By R K Rajput) -Fundamentals of Internal Combustion Engines, 2006 (By H.N. Gupta)
Special requirements (include for example workshops, periodicals, IT software, Websites)	
Community –based facilities (include for example, guest Lectures, internship, field, studies)	

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Internal Combustion Engines
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2023/09/01
9-Amis of the Course .1	
8a- Introducing the student to the classification of equipment	
8b- The students of the Department of Power Mechanics Engineering build strong foundations through their work on various axes related to the manufacture of stations, their designs, and their future prospects, as well as studying the various types of stations and learning about the foundations of their work.	
8c- Analysis of the steady flow of the compression process	
8d- Identify the basic cycles of engines and the internal combustion process of engines	

10 . Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

A-1 The student learns internal and external combustion engines

A-2 The student learns engines and their applications

A-3 The student can compare diesel engines and gasoline engines

A-4 The student will be able to rearrange the engines in order to increase the efficiency of the engines

Subject-specific skills

B1 - Helping the student to acquire analytical ability regarding internal combustion engines

B2 - Helping the student on the theoretical side of commercial transactions

B3 - Help the student identify the applications of both coastal bio engines and two-stroke vehicle engines

B-4 Helping the student to become familiar with the laws of fuel and mixtures of gases

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

C1 Work in a team spirit.

C2 He adheres to the ethics of the university institution.

C3 Receives and accepts knowledge.

C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.

2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Equipping students to operate in steam and gas power plants

D-2 Enhancing the learner's proficiency with internal combustion engines

D-3 The learner will gain proficiency in thermodynamic system analysis.

D-4. Understanding the true nature of gases and vapors in order to handle their practical applications

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2 theoretical 2 practical	The student understands the lesson	Fuels & combustions-1	Theroretical and practical	Quiz
2	2 theoretical 2 practical	The student understands the lesson	Fuels & combustions-2	Theroretical and practical	Quiz
3	2 theoretical 2 practical	The student understands the lesson	Fuels & combustions-3	Theroretical and practical	Quiz
4	2theoretical 2 practical	The student understands the lesson	Fuels & combustions-4	Theroretical and practical	Quiz
5	2 theoretical 2 practical	The student understands the lesson	Burners and Furnaces-1	Theroretical and practical	Quiz
6	2 theoretical 2 practical	The student understands the lesson	Burners and Furnaces-2	Theroretical and practical	Quiz
7	2 theoretical 2 practical	The student understands the lesson	Burners and Furnaces-3	Theroretical and practical	Quiz
8	2 theoretical 2 practical	The student understands the lesson	Burners and Furnaces-4	Theroretical and practical	Quiz
9	2 theoretical 2 practical	The student understands the lesson	Heating equipments-1	Theroretical and practical	Quiz
10	2 theoretical 2 practical	The student understands the lesson	Heating equipments-2	Theroretical and practical	Quiz
11	2 theoretical 2 practical	The student understands the lesson	Heating equipments-3	Theroretical and practical	Quiz
12	2 theoretical 2 practical	The student understands the lesson	Air pollution -1	Theroretical and practical	Quiz
13	2 theoretical 2 practical	The student understands the lesson	Air pollution -2	Theroretical and practical	Quiz
14	2 theoretical 2 practical	The student understands the lesson	Air pollution -3	Theroretical and practical	Quiz
15	2 theoretical 2 practical	The student understands the lesson	Air pollution -4	Theroretical and practical	Quiz

12. Infrastructure

Required reading:
 . CORE TEXTS
 . COURSE MATERIALS
 . OTHER

-A Textbook Internal Combustion Engines (By R K Rajput)

	-Fundamentals of Internal Combustion Engines, 2006 (By H.N. Gupta)
Special requirements (include for example workshops, periodicals, IT software, Websites)	
Community –based facilities (include for example, guest Lectures, internship, field, studies)	

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	MPE 020
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	<ul style="list-style-type: none">• It aims to introduce students to the types of renewable energy resources (five types) by engaging in various activities to help them understand the transformation of energy (solar, water, and wind) into electricity.• Students explore the different roles engineers who work in renewable energy fields have in creating a sustainable environment that contributes to excellent health, happiness, and safety

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A- Describe sources and uses of energy.

A1. Define renewable and non-renewable energy.

A2. The most common types of renewable and non-renewable energy resources.

A3. Define and describe the solar energy source, solar time calculation (equation of time and longitude correction), and solar angles (declination, hour angle, solar elevation angle, solar azimuth angle, sunrise and sunset times, day length, incidence angle).

A4. Understand and explain the solar radiation in space, terrestrial radiation, and total radiation on horizontal and inclined surfaces.

A5. Understand and explain the solar Energy Collectors (concentrating and non-concentrating

B.Subject-specific skills

B1 A renewable energy sources means energy that is sustainable - something that can't run out, or is endless, like the sun. When you hear the term (alternative energy) it's usually referring to renewable energy sources too. It means sources of energy that are alternative to the most used non-sustainable sources - like coal.

B2. The most popular renewable energy sources currently are solar energy, wind energy, hydro energy, tidal energy, and geothermal energy.

B3. Solar radiation is light – also known as electromagnetic radiation – that is emitted by the sun. Solar energy is the cleanest and most abundant renewable energy source available. Solar technologies can harness this energy for a variety of uses, including generating electricity, providing light or a comfortable interior environment, and heating water for domestic, commercial, or industrial use.

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Pre and post questions.
3. Weekly tests.
4. Semester exams

C. Thinking Skills

C1 Work in a team spirit.

C2 He adheres to the ethics of the university institution.

C3 Receives and accepts knowledge.

C4 The student feels the responsibility placed on him

Teaching and Learning Methods

- 1- Theoretical lectures
- 2- Training students in the laboratory

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

- D-1 Equipping students to operate in steam and gas power plants
- D-2 Enhancing the learner's proficiency with internal combustion engines
- D-3 The learner will gain proficiency in thermodynamic system analysis.
- D-4. Understanding the true nature of gases and vapors in order to handle their practical applications

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3 theoretical 2 practical	The student understands the lesson	General introduction to renewable energy - renewable energy sources and applications -	Theroretical and practical	Quiz
2	3 theoretical 2 practical	The student understands the lesson	renewable energy and environmental problems (acid rain, ozone layer depletion, climate change, nuclear risks).	Theroretical and practical	Quiz
3	3 theoretical 2 practical	The student understands the lesson	Sun - solar radiation in space, terrestrial radiation	Theroretical and practical	Quiz
4	3 theoretical 2 practical	The student understands the lesson	total radiation on horizontal and inclined surfaces, and direct beam and diffuse solar radiation.	Theroretical and practical	Quiz
5	3 theoretical 2 practical	The student understands the lesson	Solar energy source, solar time calculation (equation of time and longitude correction)	Theroretical and practical	Quiz
6	3 theoretical 2 practical	The student understands the lesson	and solar angles (declination, hour angle, solar elevation angle, solar azimuth angle, sunrise and sunset times, day length, incidence angle).	Theroretical and practical	Quiz
7	3 theoretical 2 practical	The student understands the lesson	Solar energy applications such as solar water collectors (non-concentrating and concentrating	Theroretical and practical	Quiz
8	3 theoretical 2 practical	The student understands the lesson	Solar tracking collectors (tubular parabolic collectors, Fresnel collectors, trough parabolic collectors, mirror fields collectors).	Theroretical and practical	Quiz
9	3 theoretical 2 practical	The student understands the lesson	Flat plate solar water collector calculations (temperature distribution between tubes and the collector efficiency factor.	Theroretical and practical	Quiz
10	3 theoretical 2 practical	The student understands the lesson	Solar water heating systems – Passive systems (thermosiphon system, and integrated collector) and Active	Theroretical and practical	Quiz

			systems (direct circulation systems, indirect water heating systems, air systems, heat pump systems, and pool heating systems).		
11	3 theoretical 2 practical	The student understands the lesson	Heat storage systems (air system thermal storage, liquid system thermal storage).	Theroretical and practical	Quiz
12	3 theoretical 2 practical	The student understands the lesson	Module and array design of solar collectors	Theroretical and practical	Quiz
13	3 theoretical 2 practical	The student understands the lesson	Photovoltaic (PV) system, the main types of solar panels, and solar PV system design.	Theroretical and practical	Quiz
14	3 theoretical 2 practical	The student understands the lesson	Wind energy: How to calculate wind energy and wind turbine energy.	Theroretical and practical	Quiz
15	3 theoretical 2 practical	The student understands the lesson	Hydropower, or hydroelectric power: the common formula for calculating hydroelectric power.	Theroretical and practical	Quiz

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Engineering thermodynamics,
Fundamentals of engineering
thermodynamics

Special requirements (include for example workshops ,periodicals,IT software ,Websites)

Community –based facilities (include for example ,guest Lectures,intership,field,studies)

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided . it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University
2- University Department /centre	Technical College Eng. of Kirkuk .Mechanics Power Tech. Eng. Dep
3-Course title	Electrical and electronic machines
4-title of final Award	Bachelor's degree in power engineering
5-Modes of Attendance offered	Class lectures
6-Accreditation	The student must be qualified to work in the fields of refractories and be graduated from the department after completing four years of study in which he is eligible to obtain a Bachelor's degree in Power Mechanical Technology .Engineering
7-Other external influences	The student will be able to maintain and repair cooling devices
8- Data of production /revision of this specification	3/24/2024
9-aims of the Course .1	
	Providing the student with a comprehensive, thorough, and up-to-date treatment of engineering mathematics
	Solving the Electrical and electronic machines equations to get the unknown variables, using matrices
	Giving an idea about limits and there engineering applications
	Providing the student with introduction to Electrical and electronic machines and their calculations with the methods of solving simultaneous equation
	Providing the student with introduction to use the math in problem

Methods learning outcomes teaching, Learning and Assessment

A-Knowledge and Understanding

. - Concept and applications of Mathematics I

1. To provide students with a foundation in basic mathematical concepts, this foundation is essential for further studies in advanced mathematics and its applications.
2. To develop a foundation in mathematical concepts, principles, and problem-solving techniques.
3. To enhance logical reasoning, critical thinking, and analytical skills.
4. To promote mathematical literacy and numeracy among students.
5. To develop students' ability to analyze problems and apply mathematical principles to solve complex problems in various contexts.

Mathematics is essential for developing numerical literacy, which involves understanding and working with numbers, data, measurements, and calculations

Teaching and Learning Methods

Explanation on the board, showing educational videos, comparing examples
. with what suits our daily lives

C. Thinking Skills

C1. able to interpret scientific facts

C2-Solving problems related to Electrical and electronic

C3- Urging students to work together by solving class assignments in groups

C4- The student should be able to understand Electrical and electronic
.terms

Teaching and Learning Methods:

Explanation on the board, showing educational videos, comparing examples
with what is consistent with our daily lives

Assessment Methods:
.Daily exams, monthly exams, homework, and in-class assignments
<p>D. General and Transferable Skills (other skills relevant to employability and personal development)</p> <p>Practical training: Practical exercises and assignments are an important .1 part of learning the connected Opportunities should be provided to .practice solving questions. Act wisely and reinforce concepts</p> <p>Tutorials: Small group science lessons can provide additional support .2 and guidance for hobbyists. We can offer these sessions on problem solving and debugging techniques. They provide an interactive audience to ask questions to personal assistance. . Peer collaboration: Encouraging peer collaboration can be beneficial in Electrical and electronic Students can work together on projects, share knowledge and exchange ideas. Collaborative activities promote teamwork, communication, and deeper .understanding of Electrical and electronic concepts</p> <p>Assessments: Regular assessments, such as quizzes, quizzes, or .4 programming</p>

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	3	DC To know the motors	DC motors acquired, installed and types	Theoretical presentation	Questions, explanation and discussion
2	3	To know the effect of forces	Electromotive force equalization velocity	Theoretical presentation	Questions, explanation and discussion
3	3	To know the control	speed control	Theoretical presentation	Questions, explanation and discussion
4	3	To know the torque	DC motor torque	Theoretical presentation	Questions, explanation and discussion
5	3	What are the laws of Torque and speed	Torque and speed	Theoretical presentation	Questions, explanation and discussion
6	3	What are the types of DC motors	characteristics of all types of DC motors	Theoretical presentation	Questions, explanation and discussion
7	3	What are the single motors 1?	single motors	Theoretical presentation	Questions, explanation and discussion
8	3	What are the three ?motors 1	Three-phase starter	Theoretical presentation	Questions, explanation and discussion
9	3	Explain diode and zener diode in forward bias and back biase	Conventional diode and zener diode in forward bias and back bias	Theoretical presentation	Questions, explanation and discussion
10	3	Connect two types	star and a triangle	Theoretical presentation	Questions, explanation and discussion
11	3	compare different type	types of DC motors	Theoretical presentation	Questions, explanation and discussion
12	3	When we use transister	transistor	Theoretical presentation	Questions, explanation and discussion
13	3	What is Electromotive force	Electromotive force equalization velocity	Theoretical presentation	Questions, explanation and discussion
14	3	How can speed control	speed control	Theoretical presentation	Questions, explanation and discussion
15	3	Draw full wave uniform	full wave uniform	Theoretical presentation	Questions, explanation and discussion

12. Infrastructure

Required reading:
 . CORE TEXTS
 . COURSE MATERIALS
 . OTHER

Special requirements (include for example workshops ,periodicals,IT software ,Websites)	periodicals
Community -based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions
Pre-requisites
Maximum number of students
Maximum number of students

Course Description (Fourth Level)

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Engineering Projects Management
4-Title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills. 2. Field visits
8- Data of production /revision of this specification	1 / 9 / 2023
9-Amis of the Course .1	
	1. To develop problem solving skills and understanding of engineering projects management.
	2. Understand the information about industrial projects and units' management for engineers.
	3. Evaluate the optimum solutions using known methods in operations research.
	4. Acquainting the principle of statistic.

10. Learning Outcomes ,Teaching ,Learning and Assessment Method

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills.

A2. The module will be achieved through classes, interactive tutorials and by considering types of simple examples involving some sampling activities that are interesting to the students.

B. Subject-specific skills

B1. To develop problem solving skills and understanding of engineering projects management concepts.

B2. To understand principles of plant location and its selection.

B3. This course deals with the Work study, Feasibility study, operation research study and Introduction to maintenance and replacement and types.

Teaching and Learning Methods

- 1- Theoretical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Formative assessments.
- 5- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of engineering projects management.

C4. Implementation of mathematical exercises and problems.

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Quizzes
Assignments
Reports
Examines

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy.

11. Course Structure

Week	Hours	ILOS	Unit/module or topic title	Teaching method	Assessment Method
1	2	The student understands the lesson	Introduction and general definition of engineering project management.	Theoretical	Weekly exams
2	2	The student understands the lesson	Plant Location definition and types.	Theoretical	Weekly exams
3	2	The student understands the lesson	Plant Location selection.	Theoretical	Weekly exams
4	2	The student understands the lesson	Project Planning (Plant Layout).	Theoretical	Weekly exams
5	2	The student understands the lesson	Project Planning (Plant Layout).	Theoretical	Weekly exams
6	2	The student understands the lesson	Work Study.	Theoretical	Weekly exams
7	2	The student understands the lesson	Work Study.	Theoretical	Weekly exams
8	2	The student understands the lesson	Introduction to feasibility Study.	Theoretical	Weekly exams
9	2	The student understands the lesson	Feasibility Study methods and applications.	Theoretical	Weekly exams
10	2	The student understands the lesson	Introduction to operation researches.	Theoretical	Weekly exams
11	2	The student understands the lesson	Operation researches methods and applications.	Theoretical	Weekly exams
12	2	The student understands the lesson	Introduction and definition of maintenance and replacement.	Theoretical	Weekly exams
13	2	The student understands the lesson	Maintenance and replacement methods.	Theoretical	Weekly exams
14	2	The student understands the lesson	Introduction to material Management.	Theoretical	Weekly exams
15	2	The student understands the lesson	Material management importance and methods.	Theoretical	Weekly exams

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

“PROJECT MANAGEMENT FOR ENGINEERING AND TECHNOLOGY” by David L. Goetsch.

Handbook of Maintenance Management and Engineering, Mohamed Ben-Daya • Salih O. Duffuaa Abdul Raouf • Jezdimir Knezevic • Daoud Ait-Kadi Editors	
“ESSENTIALS OF PROJECT AND SYSTEMS ENGINEERING MANAGEMENT ” by HOWARD EISNER	

13. Admissions
Pre-requisites
Maximum number of students
50

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	English
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Simister (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	Training courses for students to develop students' professional skills
8- Data of production /revision of this specification	2024/09/01
9-Amis of the Course .1	
8A- Introducing the student to the importance of English language in daily life	
8B- Introducing the student to types of vocabulary	
8C- Introducing the student the engineering vocabularies	
8D- Helping the students to use English his/her specialization.	
8E- Helping the students to use English to develop his skills	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A-1 The student knows to use the right word and its synonym in the right place.

A-2 The student learns to use English grammar.

A-3 The student learns to use define all what it related to his/her specialization.

B. Subject-specific skills

B1 – Writing research paper in English.

B2 – Learn to how to use English in seminars.

B3 – Learn how to do seminars in English.

Teaching and Learning Methods

1. Theoretical and practical lectures.
2. Data Show using.
3. Weekly tests.

C. Thinking Skills

C1 Work in a team spirit.

C2 He adheres to the ethics of the university institution.

C3 Receives and accepts knowledge.

C4 The student feels the responsibility placed on him

Teaching and Learning Methods

Theoretical lectures

Assessment Methods

- 1- Semester and final exams.
- 2- Brief exams (Quiz).

D. General and Transferable Skills (other skills relevant to employability and personal development)

D-1 Developing the student's self-trust while speaking English.

D-2 The students acquire skills and information in different types in Engineering vocabulary.

D-3 The student acquires the knowledge of practical sides of the subject.

D-4 The student acquires the knowledge of using different for the subject.

11. Course Structure

week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	1 theoretical	The student understands the lesson	Introduction to the subject	Theoretical	Quiz
2	1 theoretical	The student understands the lesson	General Grammer-1	Theoretical	Quiz
3	1 theoretical	The student understands the lesson	General Grammer-2	Theoretical	Quiz
4	1 theoretical	The student understands the lesson	Features of Academic English.	Theoretical	Quiz
5	1 theoretical	The student understands the lesson	Mathematical Concepts and Operations -1	Theoretical	Quiz
6	1 theoretical	The student understands the lesson	Mathematical Concepts and Operations -2	Theoretical	Quiz
7	1 theoretical	The student understands the lesson	Material Technology	Theoretical	Quiz
8	1 theoretical	The student understands the lesson	Technology in use	Theoretical	Quiz
9	1 theoretical	The student understands the lesson	Shapes Features	Theoretical	Quiz
10	1 theoretical	The student understands the lesson	Manufacturing, Joining and Fixing	Theoretical	Quiz
11	1 theoretical	The student understands the lesson	Design	Theoretical	Quiz
12	1 theoretical	The student understands the lesson	Bridges	Theoretical	Quiz
13	1 theoretical	The student understands the lesson	Technical Problems	Theoretical	Quiz
14	1 theoretical	The student understands the lesson	Writing Research Papers-1	Theoretical	Quiz
15	1 theoretical	The student understands the lesson	Writing Research Papers-2	Theoretical	Quiz

12. Infrastructure

Required reading:
 . CORE TEXTS
 . COURSE MATERIALS

Headway Upper Intermediate
 4th Edition

. OTHER	Cambridge English for Engineering - Book
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	

13. Admissions

- 1- Encourage students to do seminars in English.
- 2- Encouraging the student to write articles in English.

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Turbomachine
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	25 / 3 / 2024
9-Amis of the Course .1	
The program aims to graduate students with a specialty in power mechanical technology engineering who are qualified to work in the fields of mechanics. He will be graduated by the department after completing four years of study in which he will be eligible to obtain a bachelor's degree in power mechanical technology engineering.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

.Understand the mechanism of fluid circulation

.Study the similarity of turbomachinery .2

Provide knowledge of basic principles, governing equations and .3

.applications of turbomachinery

Provide students with opportunities to apply basic thermofluid .4

dynamics flow equations to turbomachinery

B. Subject-specific skills

B1. To develop problem solving skills and understanding of power plant systems the application of techniques.

B2. To understand feed water, reheated and regenerator.

B3. This course deals with the basic concept of power plant.

Teaching and Learning Methods

1- Theoretical and practical lectures.

2- Pre and post questions.

3- Weekly tests.

4- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of turbomachine system.

C4. Describe the importance of installing mechanical parts

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Exam and weekly quiz

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy

11. Course Structure

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	4	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
2	4	The student understands the lesson	The momentum equation and its applications: momentum and dynamic force, applications of the momentum equation	Theoretical and practical	Weekly exams
3	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
4	4	The student understands the lesson	velocity diagram, Bernoulli's law of relative motion.	Theoretical and practical	Weekly exams
5	4	The student understands the lesson	• Hydraulic machines: introduction, hydraulic turbines, pumps, hydraulic power plants,	Theoretical and practical	Weekly exams
6	4	The student understands the lesson	• Hydraulic machines: introduction, hydraulic turbines, pumps, hydraulic power plants,	Theoretical and practical	Weekly exams
7	4	The student understands the lesson	• Hydraulic machines: introduction, hydraulic turbines, pumps, hydraulic power plants,	Theoretical and practical	Weekly exams
8	4	The student understands the lesson	• Impulse turbines	Theoretical and practical	Weekly exams
9	4	The student understands the lesson	: Turbine parts, Pelton turbine theory, speed regulation mechanics, drag and propulsion system.	Theoretical and practical	Weekly exams
10	4	The student understands the lesson	• Impulse turbines	Theoretical and practical	Weekly exams
11	4	The student understands the lesson	Tutorial and solve problems	Theoretical and	Weekly exams

				practical	
12	4	The student understands the lesson	Turbo reaction	Theoretical and practical	Weekly exams
13	4	The student understands the lesson	Types, construction of turbines, theory of return turbines, necessary, flow rate through the turbine, high rate of rise, dryness, net, working characteristics, power regulator mechanics, push and pull systems	Theoretical and practical	Weekly exams
14	4	The student understands the lesson	Turbo reaction	Theoretical and practical	Weekly exams
15	4	The student understands the lesson	Pumps: centrifugal pumps and their classification, theory of centrifugal pumps, power and capacity analysis, efficiency. Pump selection and performance curv	Theoretical and practical	Weekly exams
16	4	The student understands the lesson	Pumps: centrifugal pumps and their classification, theory of centrifugal pumps, power and capacity analysis, efficiency. Pump selection and performance curv	Theoretical and practical	Weekly exams
17	4	The student understands the lesson	Pumps: centrifugal pumps and their classification, theory of centrifugal pumps, power and capacity analysis, efficiency. Pump selection and performance curv	Theoretical and practical	Weekly exams
18	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
19	4	The student understands the lesson	gas power plant description	Theoretical and practical	Weekly exams
20	4	The student understands the lesson	Increasing efficiency of power plant	Theoretical and practical	Weekly exams
21	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

22	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
23	4	The student understands the lesson	• Turbo pump.	Theoretical and practical	Weekly exams
24	4	The student understands the lesson	• Turbo pump.	Theoretical and practical	Weekly exams
25	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
26	4	The student understands the lesson	Hydraulic systems: types, construction of the hydraulic system, pros and cons of the hydraulic system	Theoretical and practical	Weekly exams
27	4	The student understands the lesson	Hydraulic systems: types, construction of the hydraulic system, pros and cons of the hydraulic system	Theoretical and practical	Weekly exams
28	4	The student understands the lesson	Hydraulic systems: types, construction of the hydraulic system, pros and cons of the hydraulic system	Theoretical and practical	Weekly exams
29	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
30	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

12. Infrastructure

Required reading:

- . CORE TEXTS
- . COURSE MATERIALS
- . OTHER

Seminar session

Special requirements (include for example workshops ,periodicals,IT software ,Websites)

Standard handbook of powerplant engineering

Community -based facilities (include for example ,guest Lectures,intership,field,studies)

https://archive.org/details/standardhandbook0000unse_t0h8/page/n3/mode/2up

13. Admissions

Pre-requisites
Maximum number of students
Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This program specification provides a concise summary of the main features of the program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the program.

1. Teaching Institution	Northern Technical University - Engineering Technical College / Kirkuk
2. University Department/Centre	Mechanics Power Tech. Eng. Dep.
3. Course Title	Computer Application
4. Title of Final Award	Bachelor of Engineering Mechanics Power Technologies
5. Modes of Attendance offered	Annual (Weekly attendance)
6. Accreditation	Accreditation Board for Engineering and Technology (ABET)
7. Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8. Date of production/revision of this specification	1 / 9 / 2023
9. Aims of the Program	1- Introducing the student to the importance of engineering drawing and its relationship to other engineering subjects.

- 2- Develop the student's mental abilities in drawing simple and complex shapes.
- 3- Expanding the horizons of the student's imagination of geometric shapes and identifying their components, parts, mechanics and their working principle

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. To familiarize the student with the importance of engineering drawing
- A2. To teach the student how to imagine geometric shapes
- A3. To distinguish the mechanical components and parts and their working principle

B. Subject-specific skills

- B1. To develop the student's mental ability to draw simple and complex shapes
- B2. The student learns how to develop a strategy and sequence for drawing and assembling and deconstructing geometric shapes
- B3. The student learns to draw geometrical projections and set geometric dimensions

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.
- 5- Using the computer in engineering drawing.

Assessment methods

- 1- Discussion and dialogue with students.
- 2- Attendance.
- 3- Oral + written + practical exams.
- 4- Using the computer in drawing engineering drawings.

C. Thinking Skills

- C1. The student listens attentively to the teacher's explanation.
- C2. To take care of the student calm and class order.
- C3. To familiarize the student with the importance of engineering drawing and its relationship with other engineering subjects
- C4. Describe the importance of installing mechanical parts

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Using AutoCAD to draw complex shapes in various fields of work.

D2. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D3. Develop sound thinking methods and release potential energy

11. Course Structure

week	Hours	ILOS	Unit/module or topic title	Teaching method	Assessment Method
1	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	Workspaces <ul style="list-style-type: none"> • Visual Styles. • 3D View. • Viewport 	theoretical + practical	Weekly exams
2-3	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	coordinate system <ul style="list-style-type: none"> • The world coordinate system (WCS) and The User Coordinate System (UCS). • Enter 3D Coordinates. • Apply the Right-Hand Rule. Absolute & Relative Coordinate	theoretical + practical	Weekly exams
4-9	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	3D Solid Primitive <ul style="list-style-type: none"> • Box. • Wedge. • Cylinder. • Cone. • Sphere. • Pyramid. • Torus. 	theoretical + practical	Weekly exams
10-15	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	UCS User Coordinate System <ul style="list-style-type: none"> • Object • Face • Origin • View • World • X, Y, Z • Z Axis • 3-point 	theoretical + practical	Weekly exams
16-18	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	Advanced 3D Commands <ul style="list-style-type: none"> • Extrude. • Loft. 	theoretical + practical	Weekly exams

			<ul style="list-style-type: none"> • Revolve . • Sweep. • Press/Pull. • Section plane. 		
19-20	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	Basic Solid Editing <ul style="list-style-type: none"> • Union. • Subtraction. • Intersection • Fillets . • Chamfer. 	theoretical + practical	Weekly exams
21-23	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	3D Operations • 3D Move. <ul style="list-style-type: none"> • 3D Rotate. • 3-3D Align. • 3D Mirror. • 3D Array. • Slice. 	theoretical + practical	Weekly exams
24-28	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	Advanced Solid Editing Face <ul style="list-style-type: none"> • Extrude • Move • Rotate • Offset • Taper • Delete • Copy • Color Edge <ul style="list-style-type: none"> • Copy • Color Body <ul style="list-style-type: none"> • Imprint • Separate Solids • Shell 	theoretical + practical	Weekly exams
29-30	(3 hours) 1 theoretical + 2 practical	The student understands the lesson	Surfaces <ul style="list-style-type: none"> • Box. • Cone. • Dish. • Dome. • Mesh Pyramid. • Sphere. • Torus. • Wedge 	theoretical + practical	Weekly exams

12. Infrastructure	
Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	1-Computer lab equipped with modern display equipment 2-Computer lab equipped with modern computers necessary for practical application.
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	1-Steve Heather - AutoCAD 3D Modeling _ Exercise Workbook- Industrial Press, Inc (2017). 2- Terence M. Shumaker ,David A. Madsen ,AutoCAD and its applications advanced, AutoCAD , 2001 3-Bernd S. Palm and Alf Yarwood ,Introduction to AutoCAD 2016
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	Basic Mechanical Drawing website tutorials

13. Admissions
Pre-requisites
Maximum number of students
50

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. it is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Store and recover energy
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	25 / 3 / 2024
9-Amis of the Course .1	The program aims to graduate students with a specialty in power mechanical engineering technology who will be qualified to work in the fields of mechanical engineering and renewable energy. He will be graduated by the department after completing four years of study in which he will be eligible to obtain a bachelor's degree in power .mechanical engineering technology

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

- 1- Energy storage systems have tremendous potential to facilitate the more efficient use of thermal equipment and large-scale economic energy alternatives.
- 2Energy storage allows electricity to be available for a later time and wherever it is needed most
- 3Energy storage can reduce operating costs related to grid capacity

B. Subject-specific skills

B1. To develop problem solving skills and understanding of power plant systems the application of techniques.

B2. To understand feed water, reheated and regenerator.

B3. This course deals with the basic concept of power plant.

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of power plant system.

C4. Describe the importance of installing mechanical parts

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Exam and weekly quiz

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy

11. Course Structure

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	4	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
2	4	The student understands the lesson	Fundamental Properties and Quantities	Theoretical and practical	Weekly exams
3	4	The student understands the lesson	Mechanical Energy Storage	Theoretical and practical	Weekly exams
4	4	The student understands the lesson	Chemical Energy Storage	Theoretical and practical	Weekly exams
5	4	The student understands the lesson	Increasing efficiency of power plant	Theoretical and practical	Weekly exams
6	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
7	4	The student understands the lesson	Biological Storage, Magnetic Storage	Theoretical and practical	Weekly exams
8	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
9	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
10	4	The student understands the lesson	Feed water heater	Theoretical and practical	Weekly exams
11	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
12	4	The student understands the lesson	Hydrogen for Energy Storage	Theoretical and practical	Weekly exams
13	4	The student understands the lesson	Thermal energy storage method	Theoretical and	Weekly exams

				practical	
14	4	The student understands the lesson	Criteria for Thermal energy storage Evaluation	Theoretical and practical	Weekly exams
15	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
16	4	The student understands the lesson	Thermal energy storage Heating and Cooling Applications	Theoretical and practical	Weekly exams
17	4	The student understands the lesson	Thermal energy storage Heating and Cooling Applications	Theoretical and practical	Weekly exams
18	4	The student understands the lesson	Thermal energy storage Heating and Cooling Applications	Theoretical and practical	Weekly exams
19	4	The student understands the lesson	Types and Features of Various Stratified Thermal energy storage Tanks	Theoretical and practical	Weekly exams
20	4	The student understands the lesson	Phase Change Materials (PCMs)	Theoretical and practical	Weekly exams
21	4	The student understands the lesson	Cold Thermal Energy Storage	Theoretical and practical	Weekly exams
22	4	The student understands the lesson	Environmental Impact and Thermal energy storage Systems and Applications	Theoretical and practical	Weekly exams
23	4	The student understands the lesson	Thermal energy storage and Energy Savings	Theoretical and practical	Weekly exams
24	4	The student understands the lesson	Energy Savings by Cold TES	Theoretical and practical	Weekly exams
25	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
26	4	The student understands the lesson	WASTE energy RECOVERY	Theoretical and practical	Weekly exams
27	4	The student understands the lesson	Tutorial and solve problems	Theoretical and	Weekly exams

				practical	
28	4	The student understands the lesson	Energy & exergy analysis	Theoretical and practical	Weekly exams
29	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
30	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	Seminar session
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	<u>ibrahim D. M. A.Rosen, <i>thermal energy storage and application</i>, Second. united kingdom: Wiley, 2011.</u>
Community -based facilities (include for example ,guest Lectures,intership,field,studies)	https://archive.org/details/standardhandbook0000unse_t0h8/page/n3/mode/2up

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University:

College:

Department:

Date of Form Completion:

Dean's Name

Date: / /

Signature

**Dean's Assistant for
Scientific Affairs**

Date: / /

Signature

Head of Department

Date: / /

Signature

Quality Assurance and University Performance Manager

Date: / /

Signature

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1. Teaching Institution	Technical College of Engineering / Kirkuk
2. University Department/Centre	Department of Power Mechanics Technology Engineering
3. Course Title	control circuits MPE 0406
4. Title of Final Award	Bachelor of Power Mechanical Engineering Technology
5. Modes of Attendance offered	
6. Accreditation	
7. Other external influences	
8. Date of production/revision of this specification	25/03/2024
9. Aims of the Course :-	The program aims to graduate students with a specialty in power mechanical technology engineering who will be qualified to work in the fields of mechanics and device control systems. He will be graduated by the department after completing four years of study in which he will be qualified to obtain a bachelor's degree in power mechanical technology

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- . A1. It aims to know mechanical control systems
- . A2. It aims to know the operation of mechanical machines and work with them
- . A3. It aims to know how to use a computer and how to program
- . A4. It aims to know how to organize and make machine outputs stable
- . A5. It aims to learn mathematics and engineering analyses
- . A6.

B. Subject-specific skills

- . B1. It aims to learn the skill of computer operation and organized work
- . B2. It aims to learn the skill of simulation
- . B3. It aims to learn the skill of designing and constructing laboratories

Teaching and Learning Methods

Delivering theoretical and practical lectures, running laboratories, workshops, and summer training during the summer vacation period

Assessment methods

Daily tests, quarterly exams (theoretical + practical), discussing periodic reports, discussing research projects

C. Thinking Skills

- . C1. Preparing educational cadres that can be relied upon in state institutions within the specialty
- . C2. Developing solutions to the problems encountered by institutions and mechanical systems
- . C3. Work to prepare the requirements of the labor market and raise economic capacity

Teaching and Learning Methods

.Development courses, periodic seminars, seminars

Assessment methods
.Periodic tests .Feed B evaluation methods -

D. General and Transferable Skills (other skills relevant to employability and personal development) D1. communication and conversation skills such as English and presentation skills .skills . D2. Teamwork skills . D3. Leadership skills and taking responsibility D4. Self-education and self-reliance skills
Teaching and Learning Methods
Assessment Methods
.Lectures, laboratories and workshops, summer training, graduation projects

11. Progame Structure				
Level/Year	Course or Module Code	Course or Module Title	Credit Rating	12. Awards and Credits
				Bachelor Degree Requires (x) credits

13. Personal Development Planning

.Methodological books

(K. Ogata, Modern Control Engineering, 3rd -

K. Warwick, An Introduction to Control System -

(Helping resources (secondary books -

The Internet, self-education websites, reputable international university websites, -
and Iraqi university websites

14. Admission criteria .

Classrooms for theoretical lectures equipped with modern presentation supplies

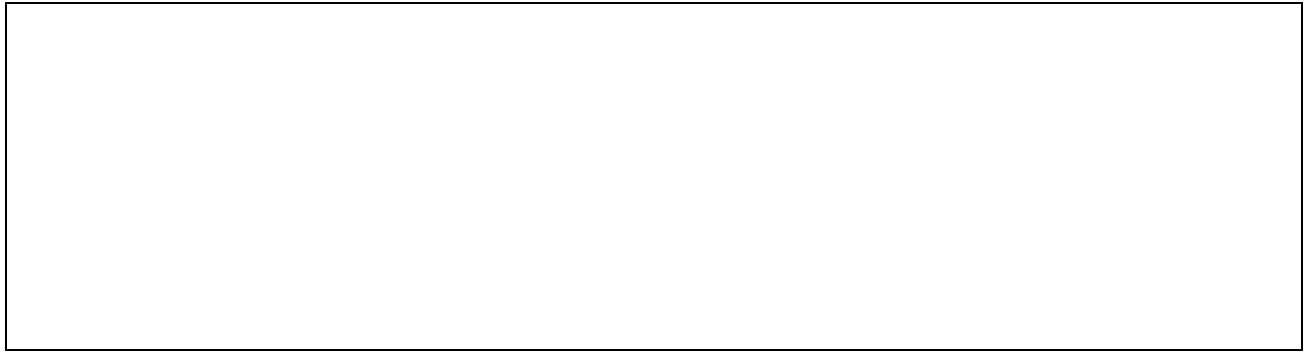
Laboratory hall equipped with the necessary laboratory equipment to conduct -
practical experiments on different types of systems

Scientific section

the average -

15. Key sources of information about the Course

Updating the course vocabulary continuously and periodically as a result of - 1
the rapid development in the field of renewable energy 2 - Writing an electronic
training package for the Control Circuits course based on the course vocabulary



TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1. Teaching Institution	Technical College of Engineering / Kirkuk
2. University Department/Centre	Department of Power Mechanics Technology Engineering
3. Course Title	Maintenance and Operation of Power Plants
4. Title of Final Award	Bachelor of Power Mechanical Engineering Technology
5. Modes of Attendance offered	
6. Accreditation	
7. Other external influences	
8. Date of production/revision of this specification	25/03/2024
9. Amis of the Course	<p>The aim of the Maintenance and Operation of Power Plants Course is to provide students with the knowledge, skills, and competencies required for the maintenance, operation, and management of power plants. The program aims to equip students with a solid foundation in the principles of power plant technology, including electrical systems, mechanical systems, instrumentation, and control systems. By combining theoretical study with practical training and industry engagement, the program aims to prepare students for careers in power generation, energy management, and related fields.</p>

10.Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. Understand fundamental concepts in power plant technology, including electrical systems, mechanical systems, and control systems.
- A2. Explain principles of maintenance and operation of power plants, including safety procedures and regulatory requirements.
- A3. Describe the various types of power plants, their components, and their functions.
- A4. Analyze and interpret technical documentation, schematics, and diagrams related to power plant equipment and systems.
- A5. Discuss the environmental and sustainability aspects of power plant operations.
- A6. Evaluate the economic factors and business considerations influencing power plant maintenance and operation.

B. Subject-specific skills

- B1. Demonstrate practical skills in the maintenance and operation of power plant equipment and systems.
- B2. Use diagnostic tools and techniques to troubleshoot power plant problems and perform repairs.
- B3. Apply safety protocols and procedures in the operation and maintenance of power plants.

Teaching and Learning Methods

Practical Training, Simulation Exercises, Internships, Workshops.

Assessment methods

Assessment Methods: Examinations, Practical Assessments, Project Reports, Presentations

C. Thinking Skills

- C1. Apply critical thinking and problem-solving skills to resolve complex issues in power plant maintenance and operation.
- C2. Evaluate the performance of power plant systems and propose improvements or optimizations.
- C3. Analyze risks and uncertainties associated with power plant operations and develop mitigation strategies.
- C4. Synthesize information from multiple sources to make informed decisions in power plant management.

Teaching and Learning Methods

periodic seminars, Problem-Based Learning, Group Discussions, Research Projects.

Assessment methods

Examinations, Practical Assessments, Project Reports, Presentations

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communicate effectively, both orally and in writing, in technical and non-technical contexts.

D2. Work collaboratively in teams to achieve common goals and objectives.

D3. Manage time and resources efficiently in the completion of tasks and projects.

D4. Adapt to new technologies and changing work environments in the field of power plant maintenance and operation.

Teaching and Learning Methods

Communication Skills Workshops, Team Projects, Time Management Exercises, Professional Development Seminars.

Assessment Methods

.Lectures, laboratories and workshops, summer training, graduation projects

11. Course Structure

Level/Year	Course or Module Code	Course or Module Title	Credit Rating	12. Awards and Credits
				Bachelor's degree Requires (x) credits

12. Infrastructure

Required reading:

. **Steam Plant Operation** Everett B. Woodruff Herbert B. Lammers Thomas F. Lammers

. **A course in power system** by j.b Gupta

-**Operation and control in power system** by b.s.mupty

Special requirements (include for example workshops ,periodicals,IT software ,Websites)	
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Community -based facilities (include for example ,guest Lectures,intership,field,studies)	
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13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course

1-Teaching institution	Northern Technical University - Engineering Technical College / Kirkuk
2- University Department /centre	Mechanics Power Tech. Eng. Dep.
3-Course title	Power Plant Systems
4-title of final Award	Bachelor of Engineering Mechanics Power Technologies
5-Modes of Attendance offered	Annual (Weekly attendance)
6-Accreditation	Accreditation Board for Engineering and Technology (ABET)
7-Other external influences	1. Training courses for students to develop students' professional skills 2. Field visits
8- Data of production /revision of this specification	1 / 9 / 2023
9-Amis of the Course .1	
1. To develop problem solving skills and understanding of power plant systems the application of techniques.	
2. To understand feed water, reheated and regenerator.	
3. This course deals with the basic concept of power plant.	
4. This is the basic subject for all power plant systems.	
5. To understand steam turbine and gas turbine problems.	

10 . Learning Outcomes ,Teaching ,Learning and Assessment Methode

A-Knowledge and Understanding

A1. The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills.

A2. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

B. Subject-specific skills

B1. To develop problem solving skills and understanding of power plant systems the application of techniques.

B2. To understand feed water, reheated and regenerator.

B3. This course deals with the basic concept of power plant.

Teaching and Learning Methods

- 1- Theoretical and practical lectures.
- 2- Pre and post questions.
- 3- Weekly tests.
- 4- Semester exams.

C. Thinking Skills

C1. The student listens attentively to the teacher's explanation.

C2. To take care of the student calm and class order.

C3. To familiarize the student with the importance of power plant system.

C4. Describe the importance of installing mechanical parts

Teaching and Learning Methods

Lectures

Home works

Slides and examples

Assessment Methods

Exam and weekly quiz

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Developing mental skills that enable the graduate to benefit from the information he learns and the skills he acquires, and employing them in serving his requirements as an individual and in serving the goals of society in terms of social and economic development.

D2. Develop sound thinking methods and release potential energy

11. Course Structure

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	4	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
2	4	The student understands the lesson	steam cycles	Theoretical and practical	Weekly exams
3	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
4	4	The student understands the lesson	Steam power plant description	Theoretical and practical	Weekly exams
5	4	The student understands the lesson	Increasing efficiency of power plant	Theoretical and practical	Weekly exams
6	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
7	4	The student understands the lesson	Reheat cycles	Theoretical and practical	Weekly exams
8	4	The student understands the lesson	Regenerative cycles	Theoretical and practical	Weekly exams
9	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
10	4	The student understands the lesson	Feed water heater	Theoretical and practical	Weekly exams
11	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
12	4	The student understands the lesson	Combined power plant	Theoretical and practical	Weekly exams

13	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
14	4	The student understands the lesson	Steam turbine	Theoretical and practical	Weekly exams
15	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
16	4	The student understands the lesson	Introduction	Theoretical and practical	Weekly exams
17	4	The student understands the lesson	gas cycles	Theoretical and practical	Weekly exams
18	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
19	4	The student understands the lesson	gas power plant description	Theoretical and practical	Weekly exams
20	4	The student understands the lesson	Increasing efficiency of power plant	Theoretical and practical	Weekly exams
21	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
22	4	The student understands the lesson	Combined cycles	Theoretical and practical	Weekly exams
23	4	The student understands the lesson	Regenerative cycles	Theoretical and practical	Weekly exams
24	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
25	4	The student understands the lesson	Feed water heater	Theoretical and practical	Weekly exams
26	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

27	4	The student understands the lesson	Combined power plant	Theoretical and practical	Weekly exams
28	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams
29	4	The student understands the lesson	Boiler	Theoretical and practical	Weekly exams
30	4	The student understands the lesson	Tutorial and solve problems	Theoretical and practical	Weekly exams

12. Infrastructure

Required reading: . CORE TEXTS . COURSE MATERIALS . OTHER	Seminar session
Special requirements (include for example workshops ,periodicals,IT software ,Websites)	<u>Standard handbook of powerplant engineering</u>
Community –based facilities (include for example ,guest Lectures,intership,field,studies)	https://archive.org/details/standardhandbook0000unse_t0h8/page/n3/mode/2up

13. Admissions

Pre-requisites

Maximum number of students

Maximum number of students

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University:

College:

Department:

Date of Form Completion:

Dean's Name

Date: / /

Signature

**Dean's Assistant for
Scientific Affairs**

Date: / /

Signature

Head of Department

Date: / /

Signature

Quality Assurance and University Performance Manager

Date: / /

Signature

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: COURSE REVIEW

This Course specification provides a concise summary of the main features of the Course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the Course.

1. Teaching Institution	Technical College of Engineering / Kirkuk
2. University Department/Centre	Department of Power Mechanics Technology Engineering
3. Course Title	Air conditioning systems
4. Title of Final Award	Bachelor of Power Mechanical Engineering Technology
5. Modes of Attendance offered	
6. Accreditation	
7. Other external influences	
8. Date of production/revision of this specification	27/03/2024
9. Aims of the Program :-	The program aims to graduate students with a specialty in power mechanical technology engineering who are qualified to work in mechanical fields and have the ability to maintain and install air conditioning units and freezer units. They will be graduated by the department after

completing four years of study in which they will be qualified to obtain a bachelor's degree in power mechanical technology engineering.

Conducting scientific and applied research to develop technologies in air conditioning

Linking the field of air conditioning with the field of information technology to introduce modern technologies in the fields of design, implementation and project management

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

- A1. The ability to perform engineering analysis and scientific thinking by applying laws in Science, mathematics, engineering, and adherence to guidelines and instructions for any event in an organizational and administrative framework for implementing a project or facing an engineering problem, solve, evaluate, and present a proposal or plan.
- A2. Preparing the student to continue self-learning and acquire new technologies and skills In the field of mechanical and thermal engineering.
- A3. To be able to work in different work environments

B. Subject-specific skills

- B1- for discussion and dialogue
- B2 - It aims to learn the skill of simulation.
- B3 - For cooperative learning by working collectively
- B4- The ability to conduct the required tests and collect, compare and analyze the results of the tests

Teaching and Learning Methods

Delivering theoretical and practical lectures, running laboratories, workshops, .and summer training during the summer vacation period

Assessment methods

Daily tests, quarterly exams (theoretical + practical), discussing periodic reports, .discussing research projects

C. Thinking Skills

C1. Preparing educational cadres that can be relied upon in state institutions within the specialty

C2. Developing solutions to the problems encountered by institutions and mechanical systems

C3. Work to prepare the requirements of the labor market and raise economic capacity

Teaching and Learning Methods

Development courses, periodic seminars, seminars, Preparing scientific laboratory and theoretical reports

Assessment methods

- Periodic tests
- Feed B evaluation method
- Understanding scientific material and engineering principles
- Diagnosis and problem solving

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. communication and conversation skills such as English and presentation skills

. D2. Teamwork skills

. D3. Leadership skills and taking responsibility

D4. Self-education and self-reliance skills

Teaching and Learning Methods

Lectures, laboratories and workshops, summer training, graduation projects.

Assessment Methods

Practical tests

Reports, research and laboratory reports-

Classroom activities-

Practical projects and graduation research-

Semester and final exams

11. Course Structure

Week	Hours	ILOS	Unit/modul or topic title	Teaching method	Assessment Method
1	2 Theoretic al and 3 practical	The student understands the lesson	AIR CONDITIONIN G SYSTEMS	Theoretical and practical	Weekly exams
2	2 Theoretic al and 3 practical	The student understands the lesson	All-Air system	Theoretical and practical	Weekly exams
3	2 Theoretic al and 3 practical	The student understands the lesson	Applications of all air systems	Theoretical and practical	Weekly exams
4	2 Theoretic al and 3 practical	The student understands the lesson	All- water systems	Theoretical and practical	Weekly exams
5	2 Theoretic al and 3 practical	The student understands the lesson	Air- water systems	Theoretical and practical	Weekly exams
6	2 Theoretic al and 3 practical	The student understands the lesson	Refrigerant based systems	Theoretical and practical	Weekly exams
7	2 Theoretic al and 3 practical	The student understands the lesson	Systems VRF	Theoretical and practical	Weekly exams
8	2 Theoretic	The student understands the lesson	Design of air conditioning ducts	Theoretical and practical	Weekly exams

	al and 3 practical				
9	2 Theoretical and 3 practical	The student understands the lesson	Design of air conditioning ducts	Theoretical and practical	Weekly exams
10	2 Theoretical and 3 practical	The student understands the lesson	Pressure Losses in Ducts	Theoretical and practical	Weekly exams
11	2 Theoretical and 3 practical	The student understands the lesson	Friction Factor for ducts	Theoretical and practical	Weekly exams
12	2 Theoretical and 3 practical	The student understands the lesson	Duct Design Methods	Theoretical and practical	Weekly exams
13	2 Theoretical and 3 practical	The student understands the lesson	Duct Design Methods	Theoretical and practical	Weekly exams
14	2 Theoretical and 3 practical	The student understands the lesson	Fans and its Application	Theoretical and practical	Weekly exams
15	2 Theoretical and 3 practical	The student understands the lesson	Fan Similarity Laws	Theoretical and practical	Weekly exams
16	2 Theoretical and 3 practical	The student understands the lesson	Fan Similarity Laws	Theoretical and practical	Weekly exams
17	2 Theoretical and 3 practical	The student understands the lesson	Fan in parallel	Theoretical and practical	Weekly exams
18	2 Theoretical	The student understands the lesson	Air handling unit	Theoretical and practical	Weekly exams

	al and 3 practical				
19	2 Theoretical and 3 practical	The student understands the lesson	Classification of air handling unit	Theoretical and practical	Weekly exams
20	2 Theoretical and 3 practical	The student understands the lesson	Space Air Distribution	Theoretical and practical	Weekly exams
21	2 Theoretical and 3 practical	The student understands the lesson	Space Air Distribution	Theoretical and practical	Weekly exams
22	2 Theoretical and 3 practical	The student understands the lesson	Advance psychrometric process	Theoretical and practical	Weekly exams
23	2 Theoretical and 3 practical	The student understands the lesson	Advance psychrometric process	Theoretical and practical	Weekly exams
24	2 Theoretical and 3 practical	The student understands the lesson	Advance psychrometric process	Theoretical and practical	Weekly exams
25	2 Theoretical and 3 practical	The student understands the lesson	Evaporative Cooling	Theoretical and practical	Weekly exams
26	2 Theoretical and 3 practical	The student understands the lesson	Evaporative Cooling	Theoretical and practical	Weekly exams
27	2 Theoretical and 3 practical	The student understands the lesson	Types of Evaporative Cooling Systems	Theoretical and practical	Weekly exams
28	2 Theoretical	The student understands the lesson	Types of Evaporative	Theoretical and practical	Weekly exams

	al and 3 practical		Cooling Systems		
29	2 Theoretical and 3 practical	The student understands the lesson	Air cleaning devices	Theoretical and practical	Weekly exams
30	2 Theoretical and 3 practical	The student understands the lesson	Type of air filters	Theoretical and practical	Weekly exams

12. Personal Development Planning

- Courses within the college.
- Courses within institutions of higher education and scientific research.
- Individual or joint scientific research (applied or theoretical)
- Scientific seminars and seminars

.Methodological books

- ASHRAE
- Helping resources (secondary books)
- The Internet, self-education websites, reputable international university websites, and Iraqi university websites

13. Infrastructure

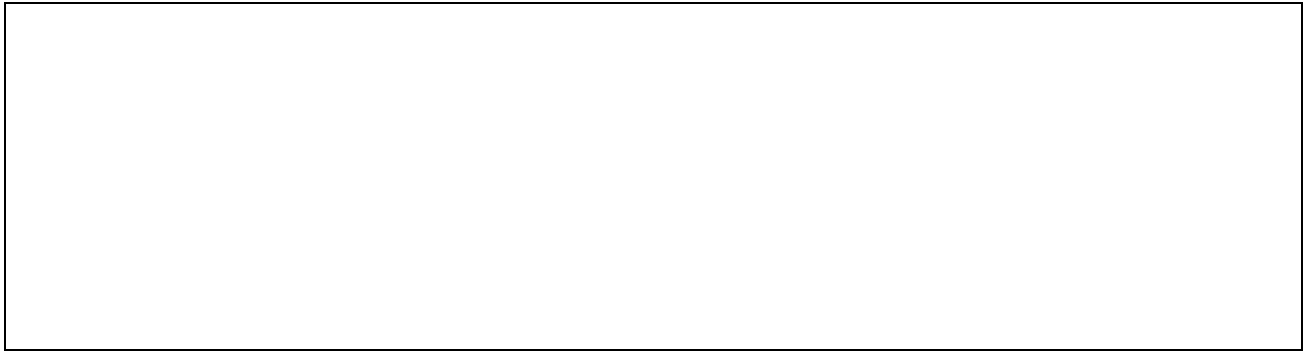
Classrooms for theoretical lectures equipped with modern presentation supplies
Laboratory hall equipped with the necessary laboratory equipment to conduct -
practical experiments on different types of systems

14. Admission criteria.

- Scientific section
- The average

15. Key sources of information about the program

Updating the course vocabulary continuously and periodically as a result of - 1
the rapid development in the field of renewable energy 2 - Writing an electronic
training package for the Air conditioning systems course based on the course
vocabulary



Curriculum Skills Map

Please tick relevant boxes where individual Course Learning Outcomes are being assessed

Course Learning Outcomes																			
Year/ Level	Course code	Course title	Core (c) title or option (O)	Knowledge and understanding				Subject-specific Skills				Thinking Skills				General and Transferable Skills (or) Other Skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4

