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

Academic Program Specification Form for The Academic Year 2019-2020

University: Northern Technical University
Institute: AL Dour technical Institute
Department: Mechanical techniques
Date Of Form Completion: 26/05/2021

Dean's Name:

Assistant prof. Mudher A.AHMED

Date: 26/ 5 /2021

Signature

Dean's Assistant for Scientific Affairs:
Assistant prof. Maha A.Jasim

Date: 26/ 5 /2021

Signature

Quality Assurance and University Performance Manager:
Sanaa.J.Mohammed
Date: 26 / 5 /2021
Signature

Republic of Iraq
Ministry of Higher Education & Scientific Research
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Academic Program Specification Form for The Academic Year 2019-2020

University: Northern Technical University
Institute: AL Dwar technical Institute
Department: Mechanical technical
Date Of Form Completion: 26/05/2021

Dean ' s Name: Assistant professor.Mudher A.AHMED

Date: / / 2021

Signature

Dean ' s Assistant for Scientific Affairs: Assistant professor.Maha A.Jasim

Date: / / 2021

Signature

Quality Assurance and University Performance Manager: Sanaa.J.Mohammed
Date: / / 2021
Signature

TEMPLATE FOR PROGRAM SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAM REVIEW

PROGRAM SPECIFICATION

This Programd Specification provides a concise summary of the main features of the programd 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 programd.

1. Teaching Institution	Al Dwar Technical Institute
2. University Department/Centre	Mechanical Technical
3. Programd Title	Diploma in mechanical technical
4. Title of Final Award	Diploma in mechanical technical
5. Modes of Attendance offered	yearly
6. Accreditation	ABET
7. Other external influences	The labor market is to follow it up, to run training to train our students as appropriate, in addition to the summer training program
8. Date of production/revision of this specification	26/5/2021
9. Aims of the Program	
Vision: Department of mechanics is one of the main technological departments. The department aims at expanding the base of technical education and its modern applications to lead providing technical services depending on the spirit of competition and cooperation with society.	
Message: Department of mechanics adopts a general mission which depends in uts general form on the frame of technical teaching in Iraq. It attempts to achieve this mission	

every year to show the peculiarity of the department. The general objectives are training national technical cadres with efficient learning and training to able to comprehend the technical systems and to support the march of technical development to cope with fast world technical progress. The mission includes the following:

1. The use of computer technology and internet in teaching and training.
2. Activating the relations with the private sector in the fields of training.
3. Following up the development of the methods of training plans and modernizing workshops.
4. Cooperating with the business market and the needs of the society in training and rehabilitation.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. An ability to apply knowledge of mechanical fields.

A2. Understand the professional and ethical responsibilities of the field of specialization.

A3. The ability to evaluate course outcomes with the faculty, industrial practitioners, and professionals, as well as employers and graduate students for improvement.

A4. Teaching leadership skills, values of commitment, ethical behavior, and respect for others.

B. Subject-specific skills

B1. Ability to work and integrate in multi-disciplinary teams.

B2. Ability to design and conduct seminars as well as analyze and interpret data.

B3. The ability to use modern technologies, skills, and competent tools and the ability to identify and formulate mechanical problems in the field of specialization.

Teaching and Learning Methods

((Oral exams / written exams / weekly reports / daily attendance / quarterly and final exams))

Power point, Seminar, Discussion, Lecture, Test

Assessment methods

Quizzes; first term. Second term exam. And final exam.

C. Thinking Skills

C1. The ability to communicate effectively with those involved in the field of specialization.
C2. Acknowledgment of the need and ability to engage in lifelong learning and the broad learning necessary to understand the impact of global solutions, mechanical problems, and the social environment.
C3. Knowledge of contemporary issues in the field of specialization.

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

Assessment methods

Quizzes; first term. Second term exam. And final exam.

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

D1. That the student be able to use the computer in designing, using modern programs, and using mechanics techniques
D2. The student learned some laws and theories of mathematics, which leads him to apply laws within the specialization
D3. The student learns the basics of occupational safety principles, in a way that contributes to preserving oneself, equipment, and various devices
D4. Teaching the student, the basic universal standards for human rights and successful democracy in developed countries.

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

Assessment Methods

Quizzes; first term. Second term exam. And final exam.				
11. Program Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
First year	DIM11	Materials properties	4	Diploma degree requires (126) credits
	DIM12	Manufacturing process I	8	
	DIM13	Workshops I	16	
	DIM14	Mechanics	10	
	DIM15	Mathematics	4	
	DIM16	Computer applications I	6	
	DIM17	Electric technology	6	
	DIM18	Human rights	4	
	DIM19	Engineering drawing, I	6	
Second year	DIM21	Parts technique	6	
	DIM22	Manufacturing process II	8	
	DIM23	Metallurgy	8	
	DIM24	Workshops II	16	
	DIM25	Project	8	
	DIM26	Computer applications II	6	
	DIM27	Management and safety	4	
	DIM28	Engineering drawing II	6	

13. Personal Development Planning
1. The establishment of field visits to the public and private sectors and universities within the jurisdiction to see the field development in the field of specialization. 2. Involving students in seminars, scientific seminars, and training courses.
14. Admission criteria.
The criteria for admission to morning studies are considered within the central admission plan, which is approved by the Ministry of Higher Education and Scientific Research. As for the admission criteria for evening studies, they are identical to the actual admission plan for morning studies.
15. Key sources of information about the program
The programs and resources are approved by the sectoral committees at the university, and there is periodic updating on them through annual meetings in order to suit the labor market.

Curriculum Skills Map																				
please tick in the relevant boxes where individual Program Learning Outcomes are being assessed																				
					Program 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**
First year	**DIM11**	Materials properties		C	**X**				**X**	**X**			**X**				**X**	**X**		
	DIM12	Manufacturing process I		C	**X**	**X**			**X**	**X**			**X**	**X**			**X**	**X**		
	DIM13	Workshops I		C	**X**				**X**	**X**			**X**	**X**			**X**	**X**		
	DIM14	Mechanics		C	**X**				**X**	**X**			**X**				**X**	**X**		
	DIM15	Mathematics		C	**X**				**X**	**X**			**X**				**X**	**X**		
	DIM16	Computer applications I		C	**X**				**X**	**X**			**X**				**X**	**X**		
	DIM17	Electric technology		C	**X**				**X**	**X**			**X**	**X**			**X**	**X**		
	DIM18	Human rights		C	**X**				**X**	**X**			**X**	**X**			**X**	**X**		
	DIM19	Engineering drawing, I		C	**X**				**X**	**X**			**X**				**X**	**X**		
Second year	**DIM21**	Parts technique		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM22	Manufacturing process II		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM23	Metallurgy		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM24	Workshops II		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM25	Project		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM26	Computer applications II		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM27	Management and safety		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		
	DIM28	Engineering drawing II		C	**X**	**X**			**X**	**X**			**X**				**X**	**X**		

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAM 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 should be cross-referenced with the program specification.

1. Teaching Institution	Al Dwar Technical Institute
2. University Department/Centre	Mechanical technical department
3. Course title/code	Manufacturing process I DIM12
4. Program(s) to which it contributes	Seminar, Website, Internet
5. Modes of Attendance offered	compulsory
6. Semester/Year	First year
7. Number of hours tuition (total)	120 hours
8. Date of production/revision of this specification	27/5/2021
9. Aims of the Course	

10· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding

A1. Study the engineering properties of materials and amorphous and identify the mechanical properties of metals and alloys.
A2.
A3.
A4.

B. Subject-specific skills

B1. Capability to manage projects
B2. The ability to solve problems on the job site and solve crises in this field

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

C. Thinking Skills

C1. Carry out his duties on the job site with professional motives.
C2.
C3.
C4.

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Knowledge and Experimental application	Definition of measurement and units of measurement, error and its causes, main dimensional measurement methods, simple conveyor measurement devices	Theoretical lecture	Tests and reports
2	4	Knowledge and Experimental application	Qadamat al-Qiyas (Al-Farniyat), its parts, uses, and types.	Theoretical lecture	Tests and reports
3	4	Knowledge and Experimental application	Micrometers, their types, uses, parts, the idea of \ u200b \ u200bthe micrometer	Power point, Lecture	Tests and reports
4	4	Knowledge and Experimental application	Measurement templates and their uses, types, method of use.	Power point, Lecture	Tests and reports
5	4	Knowledge and Experimental application	Measuring angles and side shapes. Angle measuring tools. Measuring bars (sprinkles) are of different types.	Power point, Lecture	Tests and reports
6	4	Knowledge and Experimental application	Measuring method for screw elements, external and internal diameters, step measurement and step diameter, electro-mechanical comparators.	Power point, Lecture	Tests and reports
7	4	Knowledge and Experimental application	Optical device, some modern measurement methods (audio frequency meters, optical digital).	Power point, Lecture	Tests and reports
8	4	Knowledge and Experimental application	Refrigerators and their role in industrial development, the shankara process, the tools used and the processes involved in the cold process, the files used and their specifications, the machines and their types and methods of attaching the artifacts to them, the uses of the files, the method of cleaning files.	Power point, Lecture	Tests and reports
9	4	Knowledge and Experimental application	Chainsaw cutting, the conditions to be met in the sawing process, sawing weapons, crowns and their types, crowns, method of enactment and maintenance, types of hammer heads and method of fixing them.	Power point, Lecture	Tests and reports

10	4	Knowledge and Experimental application	Piercing and bulguria, types of perforations, types of primers, types of remers, how to perform the process of drilling and bulging.	Power point, Lecture	Tests and reports
11	4	Knowledge and Experimental application	Models, types, wood used in their manufacture, conditions that must be provided in the form.	Power point, Lecture	Tests and reports
12	4	Knowledge and Experimental application	The tools and devices used in making the model, the inflorescence templates, and a simple model design method.	Power point, Lecture	Tests and reports
13	4	Knowledge and Experimental application	Casting, historical overview, roads, major casting (casting, sand casting, casting, other methods of casting) The advantages of the casting process.	Power point, Lecture	Tests and reports
14	4	Knowledge and Experimental application	Foundry sand, casting sand, specifications, components, casting sand, used appliances, and additives to casting sand.	Power point, Lecture	Tests and reports
15	4	Knowledge and Experimental application	Pruning and tools used in the preparation of sand molds, simple and seat lasts, parasitic molds and exclusionary molds used.	Power point, Lecture	Tests and reports
16	4	Knowledge and Experimental application	The pulp, its types, the pulp sand, the proportions of the mixture and the additives to it, the stages of its work (mixing and preparing sand, making the ball, drying) the benefit of the drying process furnaces or methods of drying the core and its equipment.	Power point, Lecture	Tests and reports
17	4	Knowledge and Experimental application	Casting, types, centrifugal casting, types.	Power point, Lecture	Tests and reports
18	4	Knowledge and Experimental application	Casting with lost wax, continuous casting, shell casting.	Power point, Lecture	Tests and reports
19	4	Knowledge and Experimental application	Metal smelting and their foundations, types of melting furnaces, cupola furnaces, main dimensions and operation method, furnace furnaces, electric arc furnaces, inverter furnaces, rotary kilns.	Power point, Lecture	Tests and reports
20	4	Knowledge and Experimental application	Casting castings, their equipment and foundations, cleaning castings, casting defects, checking castings.	Power point, Lecture	Tests and reports
21	4	Knowledge and Experimental application	Welding, foundations for metal welding, clarifying the main methods of welding which (pressure welding, electric arc	Power point, Lecture	Tests and reports

			fusion welding, other methods for smelting welding, tress welding and caustic welding) Types of welding joints		
22	4	Knowledge and Experimental application	Hot pressure welding including (electromotive resistance welding including point and line welding, flash welding) cold pressure welding, explosive pressure welding, ultrasound pressure welding	Power point, Lecture	Tests and reports
23	4	Knowledge and Experimental application	Smelting and gas welding, oxy-hydrogen and oxy-acetylene welding, types of flame, right and left-hand welding, balla and acetylene cutting.	Power point, Lecture	Tests and reports
24	4	Knowledge and Experimental application	Electric arc welding, welding current, direct polarity and reverse polarity method, types of electrodes, coating and types of metal electrodes.	Power point, Lecture	Tests and reports
25	4	Knowledge and Experimental application	Electrode movement, electrode isolation and welding area methods, electric arc welding using protective gases (carbon dioxide welding, argon arc welding, vapor welding(	Power point, Lecture	Tests and reports
26	4	Knowledge and Experimental application	Atomic Hydrogen Electric Arc Welding, Guided Arc Welding, Flux Fusion Welding.	Power point, Lecture	Tests and reports
27	4	Knowledge and Experimental application	Bracing and caustic welding (mortar welding and casting welding) and some modern types of welding (laser beam welding, electron beam welding.(	Power point, Lecture	Tests and reports
28	4	Knowledge and Experimental application	Welding defects, welding tests.	Power point, Lecture	Tests and reports
29	4	Knowledge and Experimental application	Metal forming, formation theory, cold and hot forming foundations, forging, foundations and methods of forging (manual, mechanical) forging equipment, manual and mechanical, steel forging elements.	Power point, Lecture	Tests and reports
30	4	Knowledge and Experimental application	Special forging methods, forging molds and their manufacture, effective force, explaining the various forging processes (communication, methods of different engineering sections in cutting operations, making simple runways, forming various artifacts).	Power point, Lecture	Tests and reports

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. Available in the free section and library of the institute. 2. Available in the free section and library of the institute.
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	
Minimum number of students	40
Maximum number of students	100

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAM 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 should be cross-referenced with the program specification.

1. Teaching Institution	Al Dwar Technical Institute
2. University Department/Centre	Mechanical technical department
3. Course title/code	Materials properties DIM11
4. Program(s) to which it contributes	Seminar, Website, Internet
5. Modes of Attendance offered	compulsory
6. Semester/Year	First year
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	27/5/2021
9. Aims of the Course	
Study the engineering properties of materials and amorphous and identify the mechanical properties of metals and alloys.	

10· Learning Outcomes, Teaching, Learning and Assessment Method

B- Knowledge and Understanding

A1. Study the engineering properties of materials and amorphous and identify the mechanical properties of metals and alloys.
A2.
A3.
A4.

B. Subject-specific skills

B1. Capability to manage projects
B2. The ability to solve problems on the job site and solve crises in this field

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

C. Thinking Skills

C1. Carry out his duties on the job site with professional motives.
C2.
C3.
C4.

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

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

D1. Improve their debating skills

D2. Raise their research perceptions and move the student from education to learning

D3.

D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Knowledge and Experimental application	Introduction	Theoretical lecture	Tests and reports
2	2	Knowledge and Experimental application	The atom, the element, types of bonds in engineering materials.	Theoretical lecture	Tests and reports
3	2	Knowledge and Experimental application	Crystalline and amorphous materials	Power point, Lecture	Tests and reports
4	2	Knowledge and Experimental application	Crystalline forms (H.C.P) (F.C.C) (B.C.C).	Power point, Lecture	Tests and reports
5	2	Knowledge and Experimental application	Mechanical properties of materials. (Stress, strain-strain-strain-flexion, ductility, collapse).	Power point, Lecture	Tests and reports
6	2	Knowledge and Experimental application	Hardness, hardness test.	Power point, Lecture	Tests and reports
7	2	Knowledge and Experimental application	Supplement.	Power point, Lecture	Tests and reports
8	2	Knowledge and Experimental application	Toughness, toughness test	Power point, Lecture	Tests and reports
9	2	Knowledge and Experimental application	Thermal properties of materials. (Thermal expansion, thermal conductivity)	Power point, Lecture	Tests and reports
10	2	Knowledge and Experimental application	Electrical properties of materials (ionic materials, insulating materials, metallic materials, factors affecting conductivity).	Power point, Lecture	Tests and reports
11	2	Knowledge and Experimental application	Magnetic properties of materials (Ferromagnetic materials, paramagnetic materials, diamagnetic materials, magnetic retardation, factors affecting magnetism).	Power point, Lecture	Tests and reports
12	2	Knowledge and Experimental application	Chemical properties of materials (Corrosion, electrochemical chain, oxidation)	Power point, Lecture	Tests and reports
13	2	Knowledge and Experimental application	Iron, its most important material, its extraction, blast furnace, and transformers.	Power point, Lecture	Tests and reports
14	2	Knowledge and Experimental application	Carbon steel, its most important types, properties, and uses.	Power point, Lecture	Tests and reports
15	2	Knowledge and Experimental application	Alloy steel, its most important types, properties, and uses	Power point, Lecture	Tests and reports

16	2	Knowledge and Experimental application	Cast iron, types, properties, uses	Power point, Lecture	Tests and reports
17	2	Knowledge and Experimental application	supplement	Power point, Lecture	Tests and reports
18	2	Knowledge and Experimental application	Copper, its alloys, properties, uses.	Power point, Lecture	Tests and reports
19	2	Knowledge and Experimental application	Aluminum, its alloys, properties, uses.	Power point, Lecture	Tests and reports
20	2	Knowledge and Experimental application	Nickel, its alloys, properties, uses	Power point, Lecture	Tests and reports
21	2	Knowledge and Experimental application	Tin, its alloys, properties, uses. Zinc, its alloys, properties, uses. Manganese, its alloys, properties, uses.	Power point, Lecture	Tests and reports
22	2	Knowledge and Experimental application	Other nonferrous alloys (white metals, bearings alloys)	Power point, Lecture	Tests and reports
23	2	Knowledge and Experimental application	Powder metallurgy (Methods for obtaining mineral powders, mechanical methods, physical and chemical methods, natural, mechanical, and chemical properties of powders.	Power point, Lecture	Tests and reports
24	2	Knowledge and Experimental application	Powder pressing, sintering process	Power point, Lecture	Tests and reports
25	2	Knowledge and Experimental application	Ceramic materials	Power point, Lecture	Tests and reports
26	2	Knowledge and Experimental application	Glass, types, manufacture, uses	Power point, Lecture	Tests and reports
27	2	Knowledge and Experimental application	Concrete, its industrial uses	Power point, Lecture	Tests and reports
28	2	Knowledge and Experimental application	Polymers, polymer molecules, polymers.	Power point, Lecture	Tests and reports
29	2	Knowledge and Experimental application	Properties and uses of plastics.	Power point, Lecture	Tests and reports
30	2	Knowledge and Experimental application	Supplement plastics.	Power point, Lecture	Tests and reports

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	3. Available in the free section and library of the institute. 4. Available in the free section and library of the institute.
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	
Minimum number of students	40
Maximum number of students	100

TEMPLATE FOR COURSE SPECIFICATION

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COURSE SPECIFICATION

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1. Teaching Institution	Al Dwar Technical Institute
2. University Department/Centre	Mechanical technical department
3. Course title/code	Mathematics DIM15
4. Program(s) to which it contributes	Seminar, Website, Internet
5. Modes of Attendance offered	compulsory
6. Semester/Year	First year
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	27/5/2021
9. Aims of the Course	

10· Learning Outcomes, Teaching, Learning and Assessment Method

C- Knowledge and Understanding

A1. Study the engineering properties of materials and amorphous and identify the mechanical properties of metals and alloys.
A2.
A3.
A4.

B. Subject-specific skills

B1. Capability to manage projects
B2. The ability to solve problems on the job site and solve crises in this field

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

C. Thinking Skills

C1. Carry out his duties on the job site with professional motives.
C2.
C3.
C4.

Teaching and Learning Methods

Power point, Seminar, Discussion, Lecture, Test

((Theoretical lectures / practical lectures / workshop / example solution / graduation project / summer training))

Assessment methods

Quizzes; Midterm exam. And final exam.

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

D1. Improve their debating skills

D2. Raise their research perceptions and move the student from education to learning

D3.

D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Knowledge and Experimental application	Determinants and their properties. Solving simultaneous equations by the method of determinants (Cramer).	Theoretical lecture	Tests and reports
2	2	Knowledge and Experimental application	Determinants and their properties. Solving simultaneous equations by the method of determinants (Cramer).	Theoretical lecture	Tests and reports
3	2	Knowledge and Experimental application	Differentiation, Algebra of Derivatives, Multiple Functions	Power point, Lecture	Tests and reports
4	2	Knowledge and Experimental application	Differentiation, Algebra of Derivatives, Multiple Functions	Power point, Lecture	Tests and reports
5	2	Knowledge and Experimental application	Differentiation, Algebra of Derivatives, Multiple Functions	Power point, Lecture	Tests and reports
6	2	Knowledge and Experimental application	Trigonometric, logarithmic, exponential functions and their derivatives and implicit functions, chain rule.	Power point, Lecture	Tests and reports
7	2	Knowledge and Experimental application	Trigonometric, logarithmic, exponential functions and their derivatives and implicit functions, chain rule.	Power point, Lecture	Tests and reports
8	2	Knowledge and Experimental application	Trigonometric, logarithmic, exponential functions and their derivatives and implicit functions, chain rule.	Power point, Lecture	Tests and reports
9	2	Knowledge and Experimental application	Graphing functions, plotting the trigonometric function and the maxima and minima	Power point, Lecture	Tests and reports
10	2	Knowledge and Experimental application	Graphing functions, plotting the trigonometric function and the maxima and minima	Power point, Lecture	Tests and reports
11	2	Knowledge and Experimental application	Graphing functions, plotting the trigonometric function and the maxima and minima	Power point, Lecture	Tests and reports
12	2	Knowledge and Experimental application	Applications of physical differential, velocity and acceleration, and engineering differential applications	Power point, Lecture	Tests and reports
13	2	Knowledge and Experimental application	Applications of physical differential, velocity and acceleration, and engineering differential applications	Power point, Lecture	Tests and reports
14	2	Knowledge and Experimental application	Integral, laws, and its relationship to differentiation, definite and indeterminate integral.	Power point, Lecture	Tests and reports

15	2	Knowledge and Experimental application	Integral, laws, and its relationship to differentiation, definite and indeterminate integral.	Power point, Lecture	Tests and reports
16	2	Knowledge and Experimental application	Implicit integration, applications of geometric (areas and volumes) and physical integration	Power point, Lecture	Tests and reports
17	2	Knowledge and Experimental application	Implicit integration, applications of geometric (areas and volumes) and physical integration	Power point, Lecture	Tests and reports
18	2	Knowledge and Experimental application	Implicit integration, applications of geometric (areas and volumes) and physical integration	Power point, Lecture	Tests and reports
19	2	Knowledge and Experimental application	Implicit integration, applications of geometric (areas and volumes) and physical integration	Power point, Lecture	Tests and reports
20	2	Knowledge and Experimental application	General methods of integration, compensation, partial, and use of exponential and logarithmic partial fractions.	Power point, Lecture	Tests and reports
21	2	Knowledge and Experimental application	General methods of integration, compensation, partial, and use of exponential and logarithmic partial fractions.	Power point, Lecture	Tests and reports
22	2	Knowledge and Experimental application	Discrete, homogeneous, and linear differential equations with their different applications.	Power point, Lecture	Tests and reports
23	2	Knowledge and Experimental application	Discrete, homogeneous, and linear differential equations with their different applications.	Power point, Lecture	Tests and reports
24	2	Knowledge and Experimental application	Discrete, homogeneous, and linear differential equations with their different applications.	Power point, Lecture	Tests and reports
25	2	Knowledge and Experimental application	Discrete, homogeneous, and linear differential equations with their different applications.	Power point, Lecture	Tests and reports
26	2	Knowledge and Experimental application	Discrete, homogeneous, and linear differential equations with their different applications	Power point, Lecture	Tests and reports
27	2	Knowledge and Experimental application	Vectors (cross multiplication, quantification, angles between vectors.	Power point, Lecture	Tests and reports
28	2	Knowledge and Experimental application	Vectors (cross multiplication, quantification, angles between vectors.	Power point, Lecture	Tests and reports
29	2	Knowledge and Experimental application	Statistics (principles) and probability theory	Power point, Lecture	Tests and reports
30	2	Knowledge and Experimental application	Statistics (principles) and probability theory	Power point, Lecture	Tests and reports