Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University
College/Institute: Karbala Polytechnic College
Academic Department: Department of Building and Construction Engineering Technologies
Academic or professional program name: Building and Construction Engineering Technologies
Final Certificate Title: Diploma or Bachelor of Science in Building and Construction Engineering Technology
Academic system: Semester-based
Description preparedon :26/4/2026
Date the file was filled: 30/4/2026

Signature:
Scientific Associate Name:
Assi. Prof. Abdul Khider Aziz Mutasher
Date: 30/4/2026

Signature:
Scientific Associate Name:
Assi. Prof. Dr. Mohamad Fadhil Neamha
Date: 12-5-2026

The file was reviewed by
Department of Quality Assurance and University Performance
Name of the Director of the Quality Assurance and UniversityPerformance:
Assi. Prof. Ali Neamah Hasan
Date:
Signature:

A pproval of the Dean

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Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2026

Introduction

of Building and Construction Engineering Technology at Al-Furat Al-Awsat was established in 2025 to offer a Diploma in Civil Technology Technical University and a Bachelor of Science in Civil Engineering. The department operates on a semester system, requiring either two or four academic years of study and the completion of credit hours. The comprehensive curriculum for the technical diploma is designed 136 to ensure graduates possess both the theoretical foundations and practical applications .of civil technology

The department seeks to attract highly qualified academic and administrative engineers and staff by ensuring the continuous development of staff skills in relation ;to the department's achievements and by encouraging scientific research work .Prioritize practical, applied research

Engineering Technologies The construction industry supplies the labor of Department ,market with specialists in building materials inspection, soil laboratory testing AutoCAD2D and , 3D ,skills, the use of surveying equipment for building projects and map preparation are all part of this program. It also provides the labor market with ,qualified technical personnel capable of executing various civil works projects conducting laboratory and field tests, preparing maps and surveys, and calculating quantities and dimensions for civil works projects. They will be able to apply their knowledge in estimating and calculating quantities and specifications for civil works projects. Furthermore, they will be able to maintain laboratory equipment and address construction industry challenges to improve production and achieve environmental .sustainability

Concepts and terminology:

Academic Program Description : This academic program description provides a concise summary of the program's key features and the expected learning outcomes for students, demonstrating whether they have made the most of the available .opportunities. It includes a description of each course within the program

Karbala Polytechnic College	**1. Educational institution**
Department of Building and Construction Engineering Technology	**2. Scientific Department Center /**
Building and Construction	**3. Name of academic or professional program**
Technical diploma or bachelor's degree Engineering Technology	**4. Name of final certificate**
quarterly	**5. :Study system / Annual / Courses Other**

ABET	**6. Accredited Accreditation Program**
There is a close relationship with the labor market through communication with official, semi-official and unofficial departments, focusing on laboratory ,tests and civil works practiced in those departments .as the curricula are updated accordingly	**7. Other external influences**
2025/9/29	**8. Date of preparation of description**

Course description : This course description provides a concise summary of the course's key features and the expected learning outcomes for students, demonstrating whether they have made the most of the available learning opportunities. It must be **.** linked to the program description

Program vision

Building and Construction Engineering Technology is working The Department of ,towards expanding the base of technical education and its modern applications building close relationships with various sectors of society in the field of exchanging scientific and practical expertise, and activating the role of scientific .research in various development fields

Program Mission

The aim is to develop highly qualified personnel in the field of construction engineering technology, contributing to the achievement of development plans and meeting the needs of the labor market. It also seeks to promote scientific research by publishing rigorous studies that support the advancement of science and education, in addition to providing technical services and contributing to solving problems related to the quality of building materials. scientific and Disseminating to produce national engineering sciences technical knowledge in the field of civil cadres at the level of technological development to keep pace with global developments and to fulfill the following

- Focus on using computer, internet , digitization and artificial intelligence technologies and incorporating them into the field of construction and building in .education and training
- Opening up to the community in the construction industry and activating the relationship with the private sector in the field of engineering consulting, training .and technical qualification
- Developing educational and training curricula in line with scientific development and introducing modern methods in training and qualification, and graduating .technical personnel to acquire high skills in the field of building and construction

Commitment to promoting joint scientific research between academics in the department and competent and experienced industrial staff to solve construction . industry problems and develop its production using modern methods

: Program objectives

1. Graduating qualified technical and engineering personnel to carry out various civil works projects, conduct laboratory and field tests, execute maps and .surveys, and calculate quantities and measurements of civil works projects
2. To complete the largest number of applied scientific research projects in .cooperation with relevant ministries and departments
3. Ensuring ongoing cooperation between the department and development .sectors in the engineering and consulting fields

Curriculum structure : All courses/study materials included in the academic program according to the approved learning system (semester, annual, Bologna track), whether required by (Ministry, University, College and Scientific .Department), with the number of study units

Second academicyear/ semester system / Polonia

UGI	Semeste	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	Total Pr/w	25						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code	Structured SWL (h/w)	UnStructured SWL (h/w)	SWL (h/w)
								CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)										
		1	BCE121-22-PM	Engineering mechanics (2)	الميكانيك الهندسي (2)	English		3				2	.	3	78	72	150	6.00	C		5.2	4.8	10
	Two	2	BCE122-22-PM	Construction materials	مواد البناء	Arabic		2		2				3	63	87	150	6.00	C		4.2	5.8	10
		3	BCE123-22-PM	Plane Surveying	المساحة المستوية	Arabic		2		3				3	78	122	200	8.00	C		5.2	8.1	13
		4	BCE124-22-PM	Concrete Materials	مواد الخرسانة	Arabic		2		2				3	63	12	75	3.00	C		4.2	0.8	5
		5	BCE125-22-PM	Engineering Statistics	الإحصاء الهندسي	English		2				1		3	48	52	100	4.00	B		3.2	3.5	7
		6	ATU12	Computer	الحاسوب	English		2			2			3	63	12	75	3.00	B		4.2	0.8	5
						Total		13	0	7	2	3	0	18	393	357	750	30			**26.2**	**23.8**	**50.0**

Learning Outcomes A consistent set of knowledge, skills, and **:**values after the successful completion of the academic program. The learning outcomes for each course must be defined in a way that achieves the program's objective.

The Department of Civil Technologies is moving towards expanding the base of technical education and its modern applications, building a close relationship with various sectors of society in the field of exchanging scientific and practical experiences and activating the role of scientific research in various development fields.

(a Cognitive objectives

1- The graduate must possess the ability to think critically on his own, solve problems manage resources and time, describe the general specialization and its concepts in a scientific and engineering manner, and make the appropriate changes accordingly

2- The ability to perform engineering analysis and scientific thinking by applying the laws of mathematics and engineering and adhering to the guidelines and instructions for any activity within the organizational and administrative framework in ,mplementing a project or facing an engineering problem, solving it, evaluating it and submitting a proposal or plan, or reformulating, translating, or interpreting it

3- The student must be able to speak and write in an effective scientific and engineering style in both Arabic and English.

4- Adherence to the ethics of professional practice and the ability to demonstrate high professional competence, in addition to commitment to personal appearance and .behavior

5- To be familiar with international civil engineering standards, to estimate market needs, to apply quality management concepts in engineering work, and to have .acquired skills in information technology

6- To be interested in protecting the environment from pollution from factory and .industrial waste, etc

B - Program-specific skills objectives

1- The ability to apply civil engineering techniques while taking into account industrial and commercial constraints.

2- Analyzing engineering problems, finding solutions, and being able to suggest suitable alternatives.

3-Scientific inquiry and evaluation

4-Constructive engineering discussions and expressing opinions

Teaching and learning strategies : lectures, identifying and diagnosing problems through explanation, exercises and classroom drills, practical applications to help students understand how to benefit from the specifications used and understand their .application

:Evaluation methods

1. Giving homework
2. Daily exams
3. Asking some questions

1. Program Vision

in the field of modern building and construction seeks to achieve leadership It technologies and to build a technical education system with an applied and practical framework that takes into account scientific progress in building and . .construction and the needs of the labor market

2. Program message

The aim is to develop highly skilled personnel in the field of construction technologies, contributing to the achievement of development plans and meeting the needs of the labor market. It also seeks to promote scientific research by ,publishing rigorous studies that support the advancement of science and education in addition to providing technical services and contributing to solving problems related to the quality of building materials. scientific and technical Disseminating to produce national cadres at engineering sciences knowledge in the field of civil the level of technological development to keep pace with global developments and :to fulfill the following

- Focus on using computer, internet , digitization and artificial intelligence technologies and incorporating them into the field of construction and building .in education and training
- Opening up to the community in the construction industry and activating the .relationship with the private sector in the field of engineering consulting .Technical training and qualification
- Developing educational and training curricula in line with scientific development and introducing modern methods in training and qualification, and graduating technical personnel to acquire high skills in the field of building and .construction

Commitment to promoting joint scientific research between academics in the department and competent and experienced industrial staff to solve construction . industry problems and develop its production using modern methods

3. Program objectives

1. Graduating qualified technical personnel to carry out various civil works projectsonduct laboratory and field tests, execute maps and surveys, and .calculate quantities and measurements of civil works projects
2. Preparing distinguished personnel in the field of civil engineering technologies, with the competence that qualifies them in the labor market to serve comprehensive development by contributing to the implementation of projects and opening new horizons of scientific

research for future development. And preparing qualified technicians in line with the responsibilities that await them in workplaces by providing students with the fundamentals of knowledge in supporting technical disciplines.

3. Adopting continuous improvement in acquiring communication and teamwork skills in various multidisciplinary projects.

Increased ability to continue learning and acquiring skills to develop professional performance, creative thinking, and work planning based on community values and professional ethics.

4. **Program accreditation**
Is the program accredited? If so, by which body? No
5. **Other external influences**
Is there a sponsor for the program? No

6. **Program structure**				
*** comments**	**Percentage**	**Study unit**	**Number of courses**	**Program structure**
				Institutional requirements
				College requirements
				Department requirements
				Summer training
				Other

***The notes may include whether the course is core or elective**

Program Description			**1.**
Credit Hours	**Course name**	**Course code**	**Year / Level**

practical	theoretical			
7	**13**	Civil Engineering Technology	**BCE**	First-Second semester
21	**12**	Karbala Technical Institute	**TC**	Second

7. Expected learning outcomes of the program	
of Knowledge Pain	
1. Problem-solving, resource and time management, describing the general discipline and its concepts in a scientific and engineering manner, and making appropriate changes .accordingly 2. Adherence to the guidelines and instructions for any activity within the organizational and administrative framework in implementing a ,project or facing an engineering problem solving it, evaluating it, submitting a proposal or plan, or reformulating, translating, or .interpreting it 3. The ability to demonstrate high professional competence, in addition to a commitment to .personal appearance and behavior 4. Predicting market needs and applying quality ,management concepts in engineering work while acquiring skills in information .technology 5. To be interested in protecting the environment from pollution from factory and industrial .waste, etc	1. The graduate possesses the ability to think .critically on their own 2. The ability to perform geometric analysis and think scientifically by applying the laws of mathematics and .engineering 3. The student should be able to speak and write in an effective scientific and engineering style in both Arabic and .English 4. Adherence to professional ethics and the ability to demonstrate high professional competence, in addition to commitment to personal appearance .and behavior 5. To be familiar with international civil engineering standards

Skills	
1. The ability to apply civil engineering techniques while taking into account industrial .and commercial constraints 2. Analyzing engineering problems, finding solutions, and being able to suggest suitable .alternatives 3. Constructive engineering discussions and .expressing opinions	1. The ability to apply civil engineering .techniques 2. Analysis of engineering .problems 3. Scientific inquiry .and evaluation
Values	
1. 'Encouraging the development of students engineering thinking in memorization and guessing, and stimulating them towards critical thinking and thinking in the pre-.memorization stage 2. Developing internet research skills to broaden .one's knowledge horizons 3. Bringing out the creative ideas of some .talented students	1. Present the engineering or design problem and ask for suggestions on possible solutions or .improvements 2. Developing internet research skills to broaden one's .knowledge horizons 3. Using brainstorming to bring out creative ideas for some .talented students

8. Teaching and learning strategies

Strategies and methods of teaching and learning adopted in the implementation of .the program in general

There are many teaching and learning methods used in the field of building and construction, and the most important of these methods are: (theoretical and practical lectures, discussion and dialogue, field visits, discussion groups on ,(specific topics, theoretical and practical student research, library activities :which helps students to reach the following results

The engineering ability to distinguish between correct information and -1 .incorrect information

.Ease of scientific formulation and ease of correction -2

.The ability to memorize and guess -3

.The ability to link engineering concepts, principles, and instructions -4

.The ability to recall, connect, and interpret -5

Assessment methods

- .Engineering projects and seminars
- .Scientific discussion, oral dialogue, and midterm and final exams
- .Homework
- .Practical activities and case studies
- Writing and submitting reports and taking notes on the engineering .experiences gained during field visits

Achievement tests are used to determine the level of information and skills a learner has acquired in a subject that has been previously learned, through their .answers to questions and paragraphs that represent the content of the subject

9. Assessment methods

The department has adopted clear and high-quality student learning assessment methods and tools to maintain the quality of its graduates and the department's academic reputation. This is reflected in the university's regulations and requirements for continuous student assessment, which include several types of evaluation methods to ensure the quality of the graduate, who represents the final outcome of the educational process. Among the most important evaluation :methods are

,a) Objective tests to measure knowledge of geometric facts, comprehension application of scientific knowledge in new situations, and recall, through the :following

- .True or false questions
- .Multiple choice questions
-) Interview questionsmatching items .(
- Completion questions.

:b) Engineering tests relating to the following matters

- .Remember the facts and figures
- .Understanding the scientific material and engineering principles
- .The ability to recall, connect, and interpret
- Simply applying knowledge in interpreting data, diagnosing and solving .problems

:This is done through the following

- -:Communication test / Open questions
- .Questions that have a specific answer

Questions that do not have a specific answer, and which aim to stimulate the :student to

- .Having the ability to answer freely
- .Possessing organizational skills
- .Having the skill to organize thoughts

.Preventing and combating cheating

1. Faculty						
Faculty members						
Faculty preparation		**Special requirements/skills (if any)**		**Specialization**		**academic rank**
lecturer	**angel**			**private**	**general**	
	√			**2**	**1**	**professor**
	√				**1**	**assistant professor**
	√			**1**	**1**	**Lecturer**
	√			**8**	**3**	**Assistant Lecturer**

Professional Development
Orienting new faculty members
Orienting new faculty members is of paramount importance due to its profound impact on maintaining their high performance and active role in the educational process. To address the various difficulties and challenges new faculty members face at the beginning of their tenure, this orientation is organized by the Deanship under the auspices of the University President, reflecting its significance within the academic community. The orientation program generally focuses on five main :areas, which are subject to change based on organizational changes and feedback 'familiarizing new faculty members with their rights and responsibilities, students rights and obligations, program quality and academic accreditation, learning .resources, and the university's scientific research programs
Professional development of faculty members

Professional development is important and plays a role In achieving quality in higher education, the roles of faculty members are generally limited to teaching and assessment, guidance and mentorship, writing and translation, professional development, community service, and scientific research. These roles are categorized into four main areas related to students, the educational institution, the local community, and the faculty member's own role. Regarding quality requirements and their relationship to faculty members, it has been shown that quality requires the quality of the faculty members themselves, as they are an active element in achieving quality, based on their input. The means of professional development for faculty members have generally focused on: 1- Self-development based on the faculty member's personal efforts through reading, attending seminars and lectures, participating in conferences and discussion panels, conducting studies .and research, writing, and translation

Institutional Development: This is the development that is planned and _2 supervised by a specialized unit in the educational institution, which can employ continuous training courses, workshops, discussion panels, hosting visiting professors, exchanging visits and research participations. Training is considered the .most important means of professional development

The importance of professional development tools and the importance of professional development in raising the level of inputs, processes and outputs in the educational system, especially since professional development will positively affect the development of performance levels in various fields, achieving .commitment and individual responsibility and confirming the spirit of teamwork These elements constitute the basics of individual and collective responsibility in achieving quality education. Therefore, professional development is a requirement for achieving quality and without it, achieving quality will be difficult and the .desired performance consistent with quality requirements will not be achieved

10.**Admission standard**

,Establishing the regulations related to enrollment in the college or institute) (whether central admission or other mentioned

Central admission for preparatory studies, vocational schools, and parallel admission

11.**Key sources of information about the program**

- Affairs Procedures Guide , Admission Regulations and Requirements
- Orders issued by the Ministry and the University
- University Examinations Management Guide for Undergraduate Studies

12.Program development plan
Engineering Technology generally focuses on continuous development. The department always strives to develop the scientific and administrative process and overcome all difficulties and obstacles that hinder the educational program by .developing human resources to develop the personality The following procedures outline the steps that have been implemented or are in the :process of being implemented in this area Continuous development of faculty members through training programs and .1 .workshops within and outside the department, university and country Increase extracurricular activities such as holding conferences, scientific .2 seminars, and personal and sports creative events locally, regionally and .internationally Encouraging faculty members to obtain the highest academic and administrative .3 .ranks Providing modern scientific resources and books to the department library to keep .4 .pace with the rapid advancements in engineering sciences Providing specialized software in mechanical engineering and the necessary .5 .computers for it, along with internet connections for all instructors

Program Skills Plan															
Learning outcomes required from the program															
Values				Skills				Knowledge				Essential or optional	Course Name	Course code	Year / Level
Q4	Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	A1				
✓	✓			✓	✓	✓		✓	✓			specialty	Engineering Mechanics (1)	BCE121	Semester Two First stage
✓	✓			✓	✓	✓		✓	✓			specialty	Construction Materials	BCE122	
✓	✓			✓	✓	✓		✓	✓			specialty	Plane Surveying	BCE123	
✓	✓			✓	✓	✓		✓	✓			specialty	Concrete Building Material	BCE 124	
✓	✓			✓	✓	✓		✓	✓			assistant	Engineering Statistic	BCE 125	
✓	✓			✓	✓	✓		✓	✓			assistant	Computer	ATU12	

- **.Please check the boxes corresponding to the individual learning outcomes from the program that are being assessed**

Course description

Module Information Course Information					
Module Title	**ENGINEERING MECHANICS (2)**			**Module Delivery**	
Module Type	**Core**			**Theory** **Lecture** **Tutorial**	
Module Code	**BCE121**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	11 UGI		**Semester of Delivery**	1	
Administering Department	BCETD		**Colleg e**	**Polytechnic College - Karbala**	
Module Lead er	**Pr. Fadhil Muhammad Dahir** **A.L. Muhammad Ali**		**e-mail**	**dr.fadeelmohamad@atu.edu.iq** **mohammed.azeez.ikr20@atu.edu.iq**	
Module Leader's Acad. Title	**Professor** **Assistant teacher**		**Module Leader's Qualification**	Professor, Assistant Lecture	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules **Relationship with other study subjects**			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents **Course objectives, learning outcomes, and guidance content**			
Module Aims Course Objectives	After successful completion of this course the student will be able to understand: **1.** 1 **student's knowledge of Units, Physical Quantities and Vectors.** **2. Demonstrates knowledge of Standards and Units, Utilization of Units and conversions.** **3. definition of linear motion equation .** **4. He will be able compute 2-D and 3-D Motion.** **5. definition of Newton's Law.** **6. Implements the Applications of Newton's Law.** **7. knowledge and calculation of work and Kinetic Energy.** **8. He will be able calculation of the Potential Energy and Conservation of Energy knowledge and calculation of the Momentum, Impulse and Collisions.** **definition of and calculation of the Rotational motion of Rigid Bodies and calculation of the Rotational Kinematics.**		
Module Learning Outcomes Learning outcomes for the subject	**The ability to convert units in various systems** **Distinguish between different physical quantities and the standards that define these quantities** **The ability of the student to solve the problems of the linear equation and the two- and three-dimensional kinetic equations.** **Implementing applied problems on Newton's law and solving potential energy and momentum issues** • **And how to solve the problems of rotational motion of solid bodies**		

Indicative Contents Guideline Contents	**Preparing the student to continue self-learning, acquiring skills and developing his potential.**
Learning and Teaching Strategies	
Strategies	In this course students are expected to: **The ability of the student to solve the problems of the linear equation and the two- and three-dimensional kinetic equations.** **Implementing applied problems on Newton's law and solving potential energy and momentum issues**

Delivery Plan (Weekly Syllabus) **Weekly theoretical curriculum**			
k	**Material Covered**	**Teaching method**	**Evaluation Method**
Week	**Syllabus**		
1-2	**Centers of gravity of simple and complex geometric shapes and their applications.**	**Listening and asking questions**	**Lecture Discussion**
3-4	**Moment of inertia of simple and compound geometric shapes and its applications.**	**Asking daily exam questions (homework)**	**Lecture**
5	**Introduction to material resistance, definition of stresses and their types, safety factor.**	**homework)**	**Discussion**
6	**Applications on stresses.**	**daily quiz**	**Lecture**
7	**Emotion, Hooke's law, relationship between emotion and stress.**	**Practical exercise. Working groups.**	**Discussion**
8	**Lateral strain, Poisson's ratio, applications of strain and stress.**	**daily quiz**	**Lecture**
9	**Shear and bending moment diagrams for bridges, how to form equations for change of shear and bending moment.**	**daily quiz**	**Discussion**

10	**Applications of drawing shear and bending moment equations for bridges**	**Homework, daily quiz**	**Lecture**
11-12	**Flexural stress of bridges and its applications.**	**homework**	**Lecture**
13	**Shear stress of bridges and its applications.**	**Homework, daily quiz**	**Discussion**
14-15	**Bridges made of different materials and their applications**	**homework**	**Lecture**
Week 16	**Final Exam**	**----**	**Lecture**

Module Evaluation **Course Material Assessment**					
s		**Time/ Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10 % (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10 % (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10 % (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1.5 hr	10 % (10)	7	LO # 1-7
	Final Exam	3	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Learning and Teaching Resources **Learning and teaching resources**

	Text	**Available in the Library?**
Required Texts	1.Engineering Mechanics / FL Singer 2. Engineering Mechanics / A. Higdon & W. B. Stiles	Yes
Recommended Texts	1. Engineering Mechanics / Mclean & Nelson	No
Websites		

APPENDIX:

GRADING SCHEME Grade chart				
Group	Grade	Assesment	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	**privilege**	90-100	Outstanding Performance
	B - Very Good	**very good**	80-89	Above average with some errors
	C - Good	**good**	70-79	Sound works with notable errors
	D - Satisfactory	**middle**	60-69	Fair but with major shortcomings
	E - Sufficient	**acceptable**	50-59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	**Accepted by decision**	(45-49)	More work required but credit awarded
	F – Fail	**Precipitate**	(0-44)	Considerable amount of work required
Note:				
NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone “near-pass fails” so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Course description

Module Information Course Information					
Module Title	**Construction material**			**Module Delivery**	
Module Type	Core			**Theory Lecture Practical**	
Module Code	**BCE122**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	**11 UGI**		**Semester of Delivery**	1	
Administering Department	**BCETD**		**Colleg e**	**Polytechnic College - Karbala**	
Module Lead er	**Pr. Essam Muhammed**		**e-mail**	**inkr.asm@atu.edu.iq**	
Module Leader's Acad. Title	**Professor**		**Module Leader's Qualification**	**None**	
Module Tutor	**None**		**e-mail**	**None**	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	**1.0**	

Relation With Other Modules Relationship with other study subjects			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims Course Objectives	This course covers the materials used in building construction, their physical properties, standard specifications, and applications. It also addresses key tests for construction materials and identifies metals (steel and non-steel) and their uses in buildings.
Module Learning Outcomes **Learning outcomes for the subject**	**1- Be aware about fundamentals of Construction Equipment.** **2- Be aware about economics of Construction Equipment.** **3- Be aware about Operating and production of different types of Construction Equipment.**
Indicative Contents Guideline Contents	– **Indicative contents of this module include, but not limited to the following:** – **Introduction – Fundamentals concepts of Construction Equipment; role, selection; types (2 hr).** – **Economics of Construction Equipment; owing cost; depreciation cost; operating cost (4 hr).** – **Operating and production of excavation equipment; backhoe; shovel; dragline; clamshell (6 hr)** – **Operating and production of road works equipment; factors affect movement of equipment; loader; scraper; dozer; grader (8 hr)** – **Operating and production of hauling equipment; trucks and wagons; trains; conveyer belts (2 hr)** – **Operating and production of lifting equipment (2 hr)** – **Operating and production of different compaction equipment (2 hr)** **Production equipment of aggregate, concrete and asphalt (2 hr)**
Learning and Teaching Strategies	

Strategies	**The main strategies that will be used to deliver this module to the students include, but not limited to face to face lecture, assignments, quizzes, site visits, mid exam and final exam.**

Delivery Plan (Weekly Syllabus) Weekly theoretical curriculum			
	Material Covered		
Week	Syllabus	**Teaching method**	**Evaluation Method**
1	**A general description of the physical properties and standard specifications of building materials and their uses in construction.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
2	**Clay bricks and their manufacturing methods.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
3	**Properties, uses, and specifications of clay bricks**.	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
4	**Tests specific to clay bricks.**	Lectures with the use of a whiteboard, combined with	Assigning homework. Completing practical reports. Providing exercises and questions.

		practical application using equipment.	Completing practical reports.
5	**Concrete bricks and concrete blocks (properties and manufacturing methods, explaining the difference between the two).**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
6	**Thermostone: its properties and manufacturing methods.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
7	**Discussion of the visit to a brick factory. Building stone: its classification and types.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
8	**Uses of building stone according to its types. Binding materials and their types.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
9	**Moisture-resistant materials (cement mortar, cement mortar-**	Lectures with the use of a whiteboard, combined with practical	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical

	lime), lime: its manufacturing method and properties.	application using equipment.	reports.
10	**Damp-resistant materials (plaster): properties and manufacturing.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
11	**Gypsum products: their types and properties.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
12	**Suspended ceiling materials and their types.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
13	**Application materials: tiles and slabs, and their types..**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.
14	**Wood – its origin, types used, and methods of use – methods of drying wood and its defects.**	Lectures with the use of a whiteboard, combined with practical	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.

		application using equipment.	
15	**Metals (ferrous and non-ferrous materials) and their uses in buildings – iron, its manufacturing methods, types, and uses. Paints.**	Lectures with the use of a whiteboard, combined with practical application using equipment.	Assigning homework. Completing practical reports. Providing exercises and questions. Completing practical reports.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**Nunnally, S. W. et al. Construction methods and management, 2007.**	**Yes**
Recommended Texts	**Peurifoy, R. L. et al. Construction Planning Equipment & Methods, 2018.**	
Websites	**Research gate; Academia**	

APPENDIX:

GRADING SCHEME **Grade chart**				
Group	Grade	Assesment	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	**privilege**	90 - 100	Outstanding Performance
	B - Very Good	**very good**	80-89	Above average with some errors
	C - Good	**good**	70-79	Sound works with notable errors
	D - Satisfactory	**middle**	60-69	Fair but with major shortcomings

	E - Sufficient	**acceptable**	50-59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	**Accepted by decision**	(45-49)	More work required but credit awarded
	F – Fail	**Precipitate**	(0-44)	Considerable amount of work required
Note:				

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTOR FORM

Module Information				
Module Title	**Plane Surveying**		**Module Delivery**	
Module Type	**C**		**Theory Lecture Tutorial**	
Module Code	**BCE- 123-22**			
ECTS Credits	**8**			
SWL (hr/sem)	**002**			
Module Level	UGx11 UGI	**Semester of Delivery**	2	
Administering Department	**BCETD**	**College**	**Polytechnic college-Karbala**	
Module Leader	**A.L. Duaa Faleh Rasool**	**e-mail**	**doaa.rasool.ikr16@atu.edu.iq**	
Module Leader's Acad. Title	**Assistant Lecture**	**Module Leader's Qualification**		
Module Tutor	None	**e-mail**	None	
Peer Reviewer Name		**e-mail**		
Review Committee Approval		**Version Number**	1.0	

Relation With Other Modules			
Prerequisite module	**None**	**Semester**	

Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	**After successful completion of this course, the student will be able to understand:** **2. The fundamentals and purpose of applied surveying.** **3. The fundamental, advantages and principles of theodolite devices.** **3. The measuring and calculations of angles including vertical and horizontal angles.** **4. The calculations of directions, whole circle bearing and reduce bearings.** **5. The kinds of traverses and coordinate calculations.** **6. The fundamentals of Tacheometry.** **7. The fundamentals of Total Stations.** **8. Measuring slope, Horizontal & vertical distances by using an EDM instrument.**
Module Learning Outcomes	Demonstrates knowledge of the fundamentals, purposes & required calculations of the **applied surveying to the students as well as qualifying him to use the different kinds of surveying instruments in the design & execution of civil engineering projects. Construct close-connected & close-circle traverses to survey small areas.** **Demonstrates knowledge of the simple computations of the coordinates of stations traverse & plotting a traverse, Problems in inverse computation. Measuring H. distances & vertical distances by using a tachometer, By using theodolite with a sub-tensebar. Measuring slope, Horizontal & vertical distances by using an EDM instrument**.

Indicative Contents	**Indicative content includes the following:** **Demonstrates knowledge of theodolites, the principle of construction. Measuring Horizontal angles, Measuring angles in the vertical plane, directions, whole circle bearing, reduce bearing, traverse surveys, bearings, and forward & back bearings (introduction).** **Demonstrates knowledge of close circle traverse, coordinates calculations of the close connected traverse, coordinates calculations Tacheometry, stadia tacheometry, Inclined sights Electromagnetic distance measurement(EDM), basic concept, systems Total station, Field Techniques, point location, missing line measurements, Resection, Azimuth, elevation, Layout Positions, and area computation**.

Learning and Teaching Strategies	
Strategies	**Type something like: 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. This will be achieved through classes, interactive tutorials and by considering simple experiments involving some sampling activities that are interesting to the students**.

Student Workload (SWL)			
Structured SWL (h/sem)	78	Structured SWL (h/w)	5.2
Unstructured SWL (h/sem)	122	Unstructured SWL (h/w)	8.1
Total SWL (h/sem)			200

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1.5 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)			
Week	**Material Covered**		
Week	Syllabus	Evaluation Method	Method Learning
1	Definition of Surveying - Its Fields - Its Divisions - Its Uses - Units of .Measurement	**Assigning homework. Completing work .reports**	Lectures with the use of a whiteboard, combined with practical application using equipment.
2	Measuring Horizontal Distances on Level Ground (The Orientation Process) - Measuring Horizontal Distances on Unevenly .Sloped Ground	**Assigning homework. Completing work .reports**	Lectures with the use of a whiteboard, combined with practical application using equipment.

3	measuring Horizontal Distances on Sloping Ground (Ground Slopes) (If the difference in elevation is known, if the degree of slope is known, if the angle of slope is known.)	Daily quizzes. Completion of practical reports. Homework assignments. Completion of practical reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
4	Erection and Dropping of Poles (Methods of Erecting and Dropping), Overcoming Obstacles (Obstacles) that Impede the Measurement of Horizontal Distances.	Daily quizzes. Completion of practical reports. Homework assignments. Completion of practical reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
5	Tape Surveying (Case of Grading During Lifting)	**Assigning homework. Completing work reports**	Lectures with the use of a whiteboard, combined with practical application using equipment.
6	Leveling - Related Definitions - Its Purposes -	**Assigning homework. Completing work reports**	Lectures with the use of a whiteboard, combined with practical application using equipment.
7	How to Calculate Point Levels Using the Elevation and Depression Method and Solving Examples	**Assigning homework. Completing work reports**	Lectures with the use of a whiteboard, combined with practical application using equipment.

8	Double Leveling - The Effect of the Earth's Curvature and Light Refraction on Leveling .Operations	Daily quizzes. Completion of practical reports. Homework assignments. Completion of practical reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
9	- Leveling Reverse Leveling with .Solved Examples	Daily quizzes. Completion of practical reports. Homework assignments. Completion of practical reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
10	Sources of Errors in Leveling Work - Accuracy ..Level - Allowable Error	Assigning homework. Completing work reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
11	Longitudinal Sections - Drawing the Longitudinal Section - Solved .Examples	Assigning homework. Completing work reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
12	Cross-Sections - Finding the Elevations of Cross-Section Points - Drawing .the Cross-Section	Daily quizzes. Completion of practical reports. Homework assignments. Completion	Lectures with the use of a whiteboard, combined with practical application using equipment.

		of practical reports.	
13	Calculating Volumes of Earth for Lifting and Demolition	Daily quizzes. Completion of practical reports. Homework assignments. Completion of practical reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
14	Checking and Adjusting the Leveling Instrument - Leveling Lines	Assigning homework. Completing work reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
15	**GIS و GPS**	Assigning homework. Completing work reports.	Lectures with the use of a whiteboard, combined with practical application using equipment.
Week 16	**Final Exam**		**Lectures with the use of a whiteboard, combined with practical application using .equipment**

MODULE DESCRIPTOR FORM

Module Information				
Module Title	Concrete Materials			Module Delivery
Module Type	Core			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	BCE- 124-22-PM			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGx1	Semester of Delivery	3	
Administering Department		College	Technical building and Construction Engineering	
Module Leader	L. Dr. Noor Abbas	e-mail	noor.najm.ikr@atu.edu.iq	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification		
Module Tutor		e-mail	E-mail	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date		Version Number		

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module	**None**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	**1. The student must be to learn the chemical characteristics of the main component of concrete and their effect on the properties of concrete** **2. The student must be to learn the physical mechanical and cheical characteristics of the main component of concrete, as well as accomplishing all the related laboratory tests.**
Module Learning Outcomes	**1. The course is the basis for the use of concrete, with emphasis on requirements and possibilities within the standard for consultants, concrete producers, contractors and owners.** **2. Proportioning of concrete including principles for self-compacting concrete taking into account fresh (rheology, stability) and hardened concrete (strength, durability, economy, sustainable development).** **3. This also includes giving the student an understanding of the importance of the constituents (cement, pozzolana/additives, admixtures and aggregates/fines including alkali aggregate reactivity) and composite theory (the Particle Matrix model).** **4. Introduction to simple calculations of volumetric relations and pore structure**

		(gel/capillary) in hydration products. The basis for the use of curing technology models (maturity, property development etc) for control and verification of hardening at winter concreting will be learnt. 5. Understanding of mechanisms causing volume change from fresh (plastic settlement, -shrinkage), via early age (temperature, autogenous shrinkage) to hardened concrete (drying shrinkage) is also given. 6. The student shall know the mechanisms for volume change in the different phases (stability, bleeding, temperature change, self-desiccation) as basis to understand cracking problems in fresh/young concrete (choice of constituents and proportions, importance of drying/keeping fresh concrete wet, temperature control etc). 7. Concrete strength; know and understand constituent materials and hydration products importance for strength properties, fracture mechanisms and the strength requirements of the standard for structural concrete. 8. Prediction and control of strength during concrete production therefore is central. 9. Finally transport properties and durability issues are treated (frost, corrosion, ASR) 10. .Knowledge: - Understanding of constituent materials for properties of fresh and hardened concrete properties- Composite models for proportioning (particle/patrix) and transport/durability

	issues (paste/aggregate)- Basic understanding of hydration as well as important physical and chemical properties of the hydration products- Basic curing technology models (maturity, property development)- 11. Know the different mechanisms causing volume change from fresh (plastic settlement, -shrinkage) via young (temperature, autogeneous shrinkage) to hardened concrete (drying shrinkage).
Indicative Contents	**Composition of concrete, function of the paste and aggregate, general properties of ordinary cement, Portland cement, making materials, chemical formulas and processes. [4 hrs.]** **Manufacture of Portland cement ,Chemical analysis of Portland cement, major and minor compounds of Portland cement. [4 hrs.]** **Properties of Portland cement, Fineness of cement ,Consistency of cement paste, Hydration reactions of cement ,Heat of hydration ,Setting and hardening of cement ,time of setting. [4 hrs.]** **Soundness of cement, Strength of cement , Influence of the compound composition on properties of cement (strength development). [4 hrs.]** **Types of cement, Ordinary Portland Cement (TYPE I), Modified Cement (Type II), Rapid-Hardening Portland Cement (Type III), Ultra-High Early Strength Cement, Low Heat Portland Cement (Type IV), Sulfate-Resisting Cement (Type V),** **White Cement and Pigments, Portland Blast-furnace Cement, Super-Sulfated Cement,**

	Pozzolana, Anti-bacterial cement, Masonry cement, Natural cement, Hydrophobic cement. [8 hrs.] **Aggregate, Classification of aggregate, According to the size, According to the source, According to the unit weight, Physical properties of aggregate, Practical shape and texture, Bond of aggregate. [4 hrs.]** **Specific Gravity, Porosity and Absorption ,Gradation, sieve analysis , max size of aggregate, fineness modulus, Gap- graded aggregate, Oversize and undersize aggregate, All- in aggregate, bulking of sand. [4 hrs.]** **Soundness of aggregate, Handling and storage aggregate, Deleterious substances organic impurities, Alkali- aggregate reaction , Alkali-carbonate reaction. [4 hrs.]**

Learning and Teaching Strategies \	
Strategies	Assessment is based on 1. **Exams.** 2. **Student feedback.** 3. **Preparation of scientific reports**.

Student Workload (SWL)			
Structured SWL (h/sem)	**63**	**Structured SWL (h/w)**	**4.2**
Unstructured SWL (h/sem)	**87**	**Unstructured SWL (h/w)**	**5.8**

Total SWL (h/sem)	150

Module Evaluation					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	3,5,6,10	
	Assignments	2	10% (10)	7, 8	
	Report	1	10% (10)	11	
	Class work	4	10% (10)	2,4,8,11	
Summative assessment	Midterm Exam	2 hr	10% (10)	12	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)			
Week	Material Covered	Evaluation Method	Method Learning
1	General principles about concrete Definition, composition, special) .(terminology, properties	Assigning homework. Completing work .reports	Lectures with the use of a whiteboard, combined with practical application

			using equipment.
٢	**Portland cement: manufacturing, ..chemical composition, and types**	**Completing work reports**	Discussion
3	**:Other types of cement** **(Natural cement, expanding cement, aluminous cement) and .the specifications of each type**	**Completing work reports**	Lecture
4	**Cement properties: Fineness, weight loss upon firing, cement ..stability, heat of hydration**	**Assigning homework.**	Dialogue and Critique
5	**Further properties of cement: initial and final setting time, compressive strength, tensile .strength**	**Assigning homework.**	Discussion
6	**Aggregates: Classification of aggregates, sampling methods, particle shape, surface texture of particles, and load-bearing .capacity of aggregates**	**asking questions**	**Discussion and mini-lesson**
7	**The proportion of salts, organic matter, and clay materials in the aggregate, especially sand, and its .reaction with alkaline substances**	**Discussion and**	**Discussion and questions**
8	**Lightweight and Heavy Aggregates: Types of Lightweight Aggregate (Natural and Artificial)** **Advantages and disadvantages of lightweight aggregate compared to .regular aggregate**	Case study	Lecture
9	**Specifications of lightweight aggregates used in structural concrete, and used in insulating**	Case study	Dialogue and Critique

	concrete and in the production of .lightweight concrete blocks		
10	**Uses of silica, silica fume, and fly ash in concrete production in .terms of specifications and effects**	Mini-dialogue and discussion	Discussion
11	**Water used in concrete production: Mixing water, curing water, and specifications for each .type**	Listening and asking questions	Lecture
12	**Fibers used in concrete (types, .specifications)**	Mini-dialogue	Dialogue and critique
13	**Concrete admixtures: Types and reasons for using each type (water-reducing admixtures, retarding admixtures, accelerator admixtures, workability-.enhancing admixtures)**	Case study	Discussion
14	**Hydration volumes of Portland cement**	Discussion and Q&A	Lecture
15	**Visit to a cement manufacturing plant**	Listening and mini-dialogue	Dialogue and critique

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	1. Properties of concrete, A ,M. NEVILLE Concrete Technology, Dr. Ahmed **.2 .2** Ali Al-Aryan	
Recommended Texts	1- **1**- Concrete Technology - Mahmoud Imam	

Websites		

Grading Scheme				
Group	**Grade**	Assesment	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A - Excellent**	Excellent	**90 - 100**	**Outstanding Performance**
	B - Very Good	Very Good	**80 - 89**	**Above average with some errors**
	C - Good	Good	**70 - 79**	**Sound work with notable errors**
	D - Satisfactory	Average	**60 - 69**	**Fair but with major shortcomings**
	E - Sufficient	Acceptable	**50 - 59**	**Work meets minimum criteria**
Fail Group (0 – 49)	**FX – Fail**	Fail (Under Review)	**(45-49)**	**More work required but credit awarded**
	F – Fail	Fail	**(0-44)**	**Considerable amount of work required**

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTOR FORM

Module Information					
Module Title	**Engineering Statistics**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**BCE125-22-P**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGx11 UGI		**Semester of Delivery**		Two
Administering Department	BCETD		**College**	**Polytechnic college-Karbala**	
Module Leader	**A.L. Yasir Amer**		**e-mail**	**Yasir.aladil.ikr@atu.edu.iq**	
Module Leader's Acad. Title	**Assistant Lecture**		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	MATH 122	Semester	Two
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**After successfully completing the course, students should be able to do the following:** **1. Use statistical methodology and tools in the engineering problem-solving process.** **2. Compute and interpret descriptive statistics using numerical and graphical techniques.** **3. Understand the basic concepts of probability, random variables, probability distribution, and joint probability distribution.** **4. Compute point estimation of parameters, explain sampling distributions, and understand the central limit theorem.** **5. Construct confidence intervals on parameters for a single sample.**
Module Learning Outcomes	**1- Describe basic definition, population, sample, random sample, frequency distributions and histogram** **2- Measure SD and average values** **3- Evaluate the probability for each event** **4- Identify the probability for the variables of Discrete and cont. distribution** **5- Recognize the sampling theory** **6- Measuring the regression constants**
Indicative Contents	**Part A** **Definitions and fundamentals: basic definition, population, sample, random sample, frequency distributions and histogram and polygon, relative and cumulative frequencies.** **Measure of central location and measure of variation and dispersion.** **Part B** **Probability theory:** **Relative frequency Venn diagram, intersection, union, conditional probability, mutually exclusive events, permutations and combinations, applications.**

	Distributions: **<u>Part C</u>** **Discrete distribution; binomial distribution and Poisson distribution, continuous distribution; normal distribution, applications.** **Sampling theory:** **<u>Part D</u>** **Sampling methods, sampling distributions, and sampling distribution of means, differences and sums, applications.** **<u>Part E</u>** **Regression and correlation:** **Choice of curves, least square methods, correlation, applications.** **Total hrs = 45 = SSWL - (Exam hrs) = 48 - 3 = 45 hr (Time table hrs x 15 weeks)**
Learning and Teaching Strategies	
Strategies	**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. 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.**

Student Workload (SWL)			
Structured SWL (h/sem)	48	Structured SWL (h/w)	**3.2**
Unstructured SWL (h/sem)	**52**	Unstructured SWL (h/w)	**3.5**

Total SWL (h/sem)	**100**		

Module Evaluation					
s		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	**2**	**10% (10)**	**5 and 10**	**LO #1, #2 and #10, #11**
	Assignments	**2**	**10% (10)**	**2 and 12**	**LO #3, #4 and #6, #7**
	Projects / Lab.	**1**	**10% (10)**	**Continuous**	**All**
	Report	**1**	**10% (10)**	**13**	**LO #5, #8 and #10**
Summative assessment	**Midterm Exam**	**2hr**	**10% (10)**	**7**	**LO #1 - #7**
	Final Exam	**3hr**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus)			
k	**Material Covered**	Evaluation Method	Method Learning

Week 1	**Definitions and fundamentals : basic definition, population, sample , random sample,**	**Listening and asking questions**	**Lecture Discussion**
Week 2	**Frequency distributions, histogram and polygon.**	**Asking daily exam questions (homework)**	**Lecture**
Week 3	**Relative and cumulative frequencies**	**homework)**	**Discussion**
Week 4	**Measure of central location.**	**daily quiz**	**Lecture**
Week 5	**Measure of variation and dispersion**	**Practical exercise. Working groups.**	**Discussion**
Week 6	**Probability theory: Relative frequency Venn diagram, intersection, union**	**daily quiz**	**Lecture**
Week 7	**Conditional probability, mutually exclusive events.**	**daily quiz**	**Discussion**
Week 8	**Permutations and combinations, applications**	**Homework, daily quiz**	**Lecture**
Week 9	**Distributions: Discrete distribution; binomial distribution**	**homework**	**Lecture**
Week 10	**Poisson distribution, continuous distribution.**	**Homework, daily quiz**	**Discussion**
Week 11	**Normal distribution, applications**	**homework**	**Lecture**

Week 12	**Sampling theory: sampling methods , sampling distributions**	**Homework, daily quiz**	**Discussion**
Week 13	**Sampling distribution of means, differences and sums, applications.**	**homework**	**Lecture**
Week 14	**Correlation between two variables, applications.**	**Homework, daily quiz**	**Lecture**
Week 15	**Regression, choice of curves, least square methods, applications.**	**homework**	**Discussion**
Week 16	**Preparatory week before the final Exam**	**homework**	**Lecture**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**Applied statistics and probability for engineers, 3rd ed. Montgomery,DC and Runger, GC.**	**Yes**
Recommended Texts	**Probability and statistics for engineers, 2008, India ed. Devore, JL.**	**Yes**

Grading Scheme				
Group	Grade	Assessment	Marks %	Definition
Success Group	**A - Excellent**	Excellent	**90 - 100**	**Outstanding Performance**

(50 - 100)	**B - Very Good**	Very Good	**80 - 89**	**Above average with some errors**
	C - Good	Good	**70 - 79**	**Sound work with notable errors**
	D - Satisfactory	Average	**60 - 69**	**Fair but with major shortcomings**
	E - Sufficient	Acceptable	**50 - 59**	**Work meets minimum criter**
Fail Group (0 – 49)	**FX – Fail**	Fail (Under Review)	**(45-49)**	**More work required bu cred awarded**
	F – Fail	Fail	**(0-44)**	**Considerable amount of wor required**

Note: Marks Decimal places above or below 0.5 will be rounded to the higher o low full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" the only adjustment to marks awarded by the original marker(s) will be the automa rounding outlined above.

MODULE DESCRIPTOR FORM

Module Information					
Module Title	**COMPUTER**			**Module Delivery**	
Module Type	**BASIC**			**Theory Lecture Tutorial**	
Module Code	**ATU12**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	**11 UGI**		**Semester of Delivery**	**2**	
Administering Department	**BCETD**		**Colleg e**	**Polytechnic college-Karbala**	
Module Leader	**A.L. Ali Maki** **A.l. Marwaa Hani**		**e-mail**	**ali.aboud.ikr21@atu.edu.iq** **marwaa.mohsen@atu.edu.iq**	
Module Leader's Acad. Title	**Assistant Lecture**		**Module Leader's Qualification**		
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

Relation With Other Modules			
Prerequisite module	**None**	**Semester**	
Co-requisites module	**None**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims أ	**After successful completion of this course the student will be able to understand:** **1. The student's knowledge of all hardware parts of the computer.** **2. Know the operation of each part of the computer.** **3. Knowing the icons on the desktop and executing commands on them.** **4. Access to all computer contents.** **5. Work on paint program.** **6. Knowledge of Microsoft Word and making reports and research using it.** **7. Knowledge of Excel and making tables with it.** **8. How to access the Internet, and how to create an email**
Module Learning Outcomes	**Knowing the operating systems used in computers and working on them, with knowledge of all computer matters in terms of software parts and hardware.**
Indicative Contents	**Indicative content Knowledge of all Microsoft Office suite and how to access and work on the Internet**
Learning and Teaching Strategies	
Strategies	**The main strategy that will be adopted in presenting these initiatives is to improve thinking skills while implementing initiatives. This will be achieved through classes and tutorials**

Student Workload (SWL)			
Structured SWL (h/sem)	**63**	Structured SWL (h/w)	**4.2**

Unstructured SWL (h/sem)	**12**	Unstructured SWL (h/w)	**0.8**
Total SWL (h/sem)	**75**		

Module Evaluation					
s		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	**2**	**10% (10)**	**5, 10**	**LO #1, 2, 10 and 11**
	Assignments	**2**	**10% (10)**	**2, 12**	**LO # 3, 4, 6 and 7**
	Projects / Lab.	**1**	**10% (10)**	**Continuous**	
	Report	**1**	**10% (10)**	**13**	**LO # 5, 8 and 10**
Summative assessment	**Midterm Exam**	**1.5 hr**	**10% (10)**	**7**	**LO # 1-7**
	Final Exam	**3 hr**	**50% (50)**	**16**	**All**

Delivery Plan (Weekly Syllabus)			
Week	**Material Covered**	Evaluation Method	Method Learning
Week	**Syllabus**		
1	**Introduction to Computers: concepts of Hardware and Software with their components; Concepts of Computing, Data,**	Evaluation Method	Method Learning

	and Information: Connecting Input/Output Devices and Peripherals to the CPU		
2	Computer Components: Computer Portions, Hardware parts, Input/Output Units, Memory Types .	Listening and asking questions	Lecture Discussion
3	Computer Components (continued): Basic CPU Components, Computer Ports, Personal Computer (Features and Types).	Asking daily exam questions (homework)	Lecture
4	Operating System and Graphical User Interface (GUI): Operating System; Basics of Common Operating Systems; User Interface; Using Mouse Techniques.	homework)	Discussion
5	Operating System and Graphical User Interface (GUI) (continued): Using Common Icons, Status Bar, Using and Selecting Menus, Concept of Folders and directories, Opening and Closing Different Windows; Creating Shortcuts.	daily quiz	Lecture
6	Word Processing: Word Processing Basics; Basic Features of Word Processors, Opening and Closing of Documents, Text Creating and Manipulating Text; Formatting Text and Paragraphs;	Practical exercise. Working groups.	Discussion

	Using Templates to Create Documents.		
7	**Word Processing (continued): Creating and Managing Tables, Utilizing Styles and Themes, Spell check and Grammar Tools, Using Headers and Footers.**	**daily quiz**	**Lecture**
8	**Spread sheets: Introduction to spreadsheet t software, creating and formatting worksheets, sorting and filtering data, using formulas and functions.**	**daily quiz**	**Discussion**
9	**Spreadsheet (continued): Using formulas and functions, using pivot tables for analyze data , validating and error checking ,data visualization: creating charts and graphs**	**Homework, daily quiz**	**Lecture**
10	**Presentation Software: Introduction to presentation software, overview of popular presentation tools, creating a new presentation, using templates and themes, inserting and formatting text and images, transition, and animations effects.**	**homework**	**Lecture**
11	**Presentation Software (continued): Using speaker notes and timers, advanced features: hyperlinks and action buttons, troubleshooting common presentation issues, future**	**Homework, daily quiz**	**Discussion**

	trends in presentation technology.		
12	Introduction to the Internet and Web Browsers : Computer networking basics; Local Area Networks (LANs) and Wide Area Networks (WANs); concept of the Internet and in applications; connecting to Internet.	homework	Lecture
13	World Wide Web;web browsing the Internet, search engines; understanding URLs; domain names; IP addresses.	Homework, daily quiz	Discussion
14	Communications and Email: basics of electronic mail ,getting an email account; sending and receiving email messages; Accessing sent emails; Using email ; Collaborating documents Collaborating	homework	Lecture
15	Introduction to cloud computing services: Definition and concept of cloud computing, cloud Office suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet.	Homework, daily quiz	Lecture
Week 16	Final Exam	homework	Discussion

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		**Yes**
		No
Websites		

APPENDIX:

GRADING SCHEME				
Group	**Grade**	assessment	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A - Excellent**	Excellent	**90 - 100**	**Outstanding Performance**
	B - Very Good	Very Good	**80 - 89**	**Above average with some errors**
	C - Good	Good	**70 - 79**	**Sound work with notable errors**
	D - Satisfactory	Average	**60 - 69**	**Fair but with major shortcomings**
	E - Sufficient	Acceptable	**50 - 59**	**Work meets minimum criteria**
Fail Group (0 – 49)	**FX – Fail**	Fail (Under Review)	**(45-49)**	**More work required but credit awarded**
	F – Fail	Fail	**(0-44)**	**Considerable amount of work required**
Note:				

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.