Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation
Department Accreditation

Academic program and course description guide

2024-2025

Introduction:

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies 3/2906. On 5/3/2023 with regard to programs that adopt the Bologna Process as a basis for their work.

In this area, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational process

Concepts and terminology:

Description of the academic program: The description of the academic program provides a brief summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be a developed, inspiring, motivating, realistic and applicable program.

The program's mission: It briefly explains the goals and activities necessary to achieve them, and also defines the program's development paths and directions.

Program objectives: These are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning outcomes: A consistent set of knowledge, skills, and values that the student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the programming.

Academic program description

University name: Northern Technical University

College/Institute: Technical Engineering College / Mosul

Scientific Department: Building and Construction Techniques Engineering

Name of the academic or professional program: Bachelor's in Building and Construction Techniques Engineering

Name of final degree: Bachelor's in Building and Construction Techniques Engineering

School system: Bologna.

Date of preparing the description: 15/9/2024

Date of form completion: 14/10/2024

Signature:
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Dean's Assistant for Scientific Affairs
Date: 15 /10/ 2024

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وزارة التعليم العالي والبحث العلمي
الجامعة التقنية الشمالية
الكلية التقنية الهندسية / الموصل

1. Vision

The Department of Building and Construction Techniques Engineering strives for excellence and leadership in education and scientific research at the bachelor's, master's, and doctoral levels. The department aims to prepare outstanding technical engineers capable of keeping up with and advancing the rapidly evolving technology in the construction sector. It works to enhance scientific research and development through innovative research projects that contribute to the sector's growth. The department also aims to supply the labour market with competencies capable of creating new job opportunities outside the public sector, contributing to self-development and serving the community. It focuses on preparing graduates who are proficient in designing, implementing, and managing engineering projects according to the highest quality standards.

2. Program message

Prepare technologically proficient engineers with the capability to employ modern techniques in designing, implementing, and maintaining diverse engineering projects. Also, equip them to manage and operate specialized production units for manufacturing construction materials and structural systems. Develop their ability to inspect various types of construction materials and structures. Foster a culture of continuous learning, self-improvement, and accessing reliable information sources. Additionally, cultivate and support creativity, innovation, and development among students and graduates, addressing the cultural requirements related to heritage and economic requirements. Facilitate employment opportunities for graduates, minimizing reliance on foreign competencies.

3. Program Goals

The **Building and Construction Techniques Engineering** department aims to:

1. Provide comprehensive academic programs leading to Bachelor's, Master's, and Ph.D. degrees in Building and Construction Techniques Engineering, focusing on developing engineering and technical skills to meet labour market demands.
2. Equip graduates with high-level competencies in designing, executing, and maintaining engineering projects, with the ability to integrate modern technologies and innovative solutions in the field of construction and building.
3. Advance scientific research in Building Technologies and Construction Materials Engineering, with a focus on applied research that addresses engineering challenges and contributes to technological advancements.
4. Offer engineering consultancy and technical services for various projects and enhance collaboration with governmental and private sectors to support sustainable infrastructure development.
5. Strengthen engagement with graduates to monitor their professional growth and utilize their expertise in updating curricula, ensuring alignment with modern advancements in the construction sector.
6. Contribute to community development by providing training courses and professional

development programs for workers in the construction and building sector, aiming to enhance workforce efficiency and improve project quality.

4. Program accreditation

The program has applied for program accreditation from the National Council for Program Accreditation of Technical Engineering Education, which operates under the Scientific Supervision and Evaluation Apparatus.

5. Other external influences

The program is supported by various external and local entities. Notably, the department has collaborated closely with international organizations such as UNESCO, which has played a significant role in supporting curriculum development efforts to align with labor market needs. Additionally, local partners have contributed by offering employment opportunities to graduates, as well as post-graduation training programs designed to prepare students for successful integration into the job market

6. Program structure

Program Structure	Number of Courses	Study Unit	Percentage	Notes*
Enterprise requirements	6	11	14.6	Secondary course
College requirements	6	46	14.6	Basic course
Department requirements	26	183	63.4	Basic course
summer training	2	-	3.2	Basic course
Others	None			

* Notes may include whether the course is core or elective.

7. Program description

Level/Semester	course code	Course or course name	Credit hours	
First / First	NTU101	English Language	Theoretical	2
First / First	NTU100	Democracy & Human Rights	Theoretical	2
First / First	BCE101	Construction Materials	Theoretical	2
			Practical	3

First / First	BCE102	Plain Surveying	Theoretical	2
			Practical	3
First / First	BCE103	Engineering Mechanics (Static)	Theoretical	5
First / First	BCE104	Engineering Drawing and Descriptive Geometry	Practical	6
First / First	BCE105	Engineering Physics	Theoretical	3
First / Second	BCE106	Building Materials	Theoretical	2
			Practical	3
First / Second	BCE107	Surveying-I	Theoretical	2
			Practical	3
First / Second	BCE108	Engineering Geology	Theoretical	2
			Practical	1
First / Second	BCE109	Engineering Mechanics (Dynamic)	Theoretical	4
First / Second	BCE110	Calculas-1	Theoretical	4
First / Second	NTU102	Computer	Practical	2
First / Second	NTU103	Arabic Language	Theoretical	2
Second / First	BCE 201	Concrete Technology-I	Theoretical	2
			Practical	3
Second / First	BCE 202	Strength of Materials	Theoretical	4
Second / First	BCE 203	Building Construction	Theoretical	3
Second / First	BCE 204	Surveying-II	Theoretical	2
			Practical	3
Second / First	BCE 205	Probability & Statistics	Theoretical	3
Second / First	BCE 206	Calculus -II	Theoretical	3
Second / First	NTU200	Crimes of Baath Party Regime in Iraq	Theoretical	2
Second / First	NTU201	English Language	Theoretical	2
Second / Second	BCE 209	Concrete Technology-II	Theoretical	2
			Practical	3
Second / Second	BCE 210	Solid Mechanics	Theoretical	4
Second / Second	BCE 211	Construction Techniques	Theoretical	3
Second / Second	BCE 212	Fluid Mechanics	Theoretical	2
Second / Second	BCE 213	Mathematics	Theoretical	3
Second / Second	NTU202	Computer	Theoretical	1
			Practical	2
Second / Second	NTU203	Arabic Language	Theoretical	2
Second / Second	BCE 214	Practical Training-I	Practical	
Third / First	BCE 301	Concrete Technology-III	Theoretical	2
			Practical	3
Third / First	BCE 302	Fundamentals of Reinforced	Theoretical	4

		Concrete		
Third / First	BCE 303	Structural Analysis	Theoretical	4
Third / First	BCE 304	Soil Mechanics	Theoretical	2
			Practical	2
Third / First	BCE 305	Pavement Engineering	Theoretical	2
			Practical	2
Third / First	BCE 306	Engineering Analysis	Theoretical	3
Third / Second	BCE 307	Masonry Buildings	Theoretical	4
Third / Second	BCE 308	Construction Management	Theoretical	4
Third / Second	BCE 309	Advanced Soil Mechanics	Theoretical	2
			Practical	2
Third / Second	BCE 310	Environmental Engineering	Theoretical	2
			Practical	2
Third / Second	BCE 311	Advanced Pavement Engineering	Theoretical	3
Third / Second	BCE 312	Numerical Analysis	Theoretical	3
Third / Second	BCE 313	Practical Training	Practical	
Fourth / First	BCE 401	Design of Reinforced Concrete Structures	Theoretical	4
Fourth / First	BCE 402	Transportation Engineering	Theoretical	3
Fourth / First	BCE 403	Quantity Surveying & Estimating	Theoretical	5
Fourth / First	BCE 404	Foundation Engineering	Theoretical	5
Fourth / First	BCE 405	Construction Drawing	Theoretical	1
			Practical	2
Fourth / First	BCE 406	Design of Steel Structures	Theoretical	5
Fourth / First	BCE 407	Innovative Project- I	Practical	2
Fourth / Second	BCE 408	Materials for Heritage Buildings	Theoretical	3
Fourth / Second	BCE 409	Advanced Foundation Engineering	Theoretical	5
Fourth / Second	BCE 410	Safety in Construction	Theoretical	2
Fourth / Second	BCE 411	Computer Aided Design of Structure	Theoretical	2
			Practical	3
Fourth / Second	BCE 412	Repairs & Rehabilitation of Structures	Theoretical	3
Fourth / Second	BEC 413	Sustainable Construction Materials	Theoretical	3
Fourth / Second	BEC 414	Innovative Project-II	Practical	2

8.Expected learning outcomes of the program

Knowledge	
A 1: Specialized Engineering Knowledge	Demonstrate comprehensive understanding of structural, geotechnical, transportation, and environmental engineering relevant to building and construction technologies.
A 2: Construction Materials and Technologies	Identify and assess traditional and advanced construction materials in terms of properties, applications, durability, sustainability, and environmental impact.
A 3: Engineering Codes and Standards	Understand and apply national and international engineering regulations, codes, and standards in design and execution of construction projects.
A 4: Construction Technology and Innovation	Demonstrate awareness of modern construction technologies including prefabrication, smart materials, and digital engineering tools.
Skills	
B1 – Site Investigation, Surveying and Testing:	Conduct laboratory and field tests (destructive and non-destructive) on materials and soils; analyze results for compliance and structural integrity. Use modern surveying equipment and software for land measurement, leveling, layout, and infrastructure design
B2 – Technical Drawing and Structural analysis:	Prepare and interpret structural and architectural drawings using CAD tools; generate quantity takeoffs, cost estimates, and technical reports. Utilize engineering software to analyze and evaluate structural systems in terms of strength, stability, and safety
B3 – Project Planning, Management, and Site Management	Apply project scheduling and resource management techniques for efficient execution of engineering projects. Manage construction site activities, including equipment logistics, quality control, and adherence to health and safety protocols
B4 – Documentation and Safety management:	Compile technical documentation and reports in line with engineering standards. Implement and monitor health and safety protocols on-site to ensure compliance with regulatory frameworks
Ethics	
C1 – Professional Ethics:	Practice engineering with integrity, accountability, and fairness, adhering to ethical standards and societal responsibility.
C2 – Environmental Responsibility:	Integrate sustainability principles and eco-friendly practices throughout project planning, design, and execution.
C3 – Lifelong Learning:	Commit to continuous personal and professional development by staying current with advancements in construction engineering.
C4 – Leadership and Teamwork:	Demonstrate effective leadership, collaboration, and communication skills within multidisciplinary project teams.

9. Teaching and learning strategies

The teaching and learning strategies for the program are designed to ensure active engagement and skill acquisition through a variety of methods. These include:

1. Interactive lectures and problem-based learning (PBL)
2. Laboratory and field work

3. Design projects and case studies
4. Summer training
5. Group discussions and seminars
6. Use of simulation and engineering software tools
7. Capstone project for integrative learning

10. Evaluation methods

Evaluation is conducted continuously and systematically across the program stages using a combination of methods such as:

- Written exams (midterm and final)
- Quizzes and assignments
- Laboratory and practical reports
- Project presentations and technical documentation
- Oral examinations and peer assessment
- Evaluation of internship performance
- Capstone project defence and rubric-based assessment

11. Education institution

Faculty members

Scientific rank	Specialization		Special requirements/skills (if any)		Preparing the teaching staff	
	General	Private			Permanent staff	lecturer
Prof	Civil	Construction materials			1	-
Assist Prof	Civil	Construction materials/ Structure/ Environment/ Soil Mechanics			5	-
Lecturer	Civil	Construction materials/ Structure/ Environment/ Water resources/ architecture			12	1
Assist Lecturer	Civil/ Water Resources	Construction materials/ Water resources/ Building materials/ Soil mechanics/ architecture			12	5

12. Professional development

Orienting new faculty members

The institution adopts a structured and systematic mentoring process to support new, visiting, full-time, and part-time faculty members in their transition into the academic environment. The process is designed to

foster professional integration, pedagogical competence, and alignment with institutional values and quality standards. The mentoring program includes the following components:

Orientation and Induction Program: All new faculty members attend a mandatory orientation at the beginning of their appointment. This includes an introduction to the institution's mission, academic policies, curriculum framework, teaching and learning strategies, research expectations, and administrative procedures.

Teaching Support and Peer Observation: New faculty are encouraged to participate in peer observation cycles, where they attend and are observed during classroom sessions. Constructive feedback is provided to help them improve their teaching practices. Participation in workshops on instructional design, outcome-based education (OBE), and technology-enhanced learning is also supported.

Regular Review Meetings: Monthly review sessions are held between the Head of department and the new faculty to track progress, discuss challenges, and ensure integration into academic and research activities. These meetings are documented and reported to the scientific committee to monitor mentoring effectiveness.

Professional Development Plan: Each new faculty member develops an individualized professional development plan. This plan outlines short-term and long-term goals for teaching, research, and service.

Professional development for faculty members

The institution implements a continuous professional development plan that includes training in modern teaching and learning strategies, assessment of learning outcomes, use of digital tools and simulation software, and participation in national and international conferences. Faculty are also encouraged to engage in research and community service to enhance their academic profiles.

13. Acceptance standard

Admission to the Building and Construction Techniques Engineering program is primarily granted through centralized admission for graduates of the scientific branch of secondary education, in accordance with the annual requirements and minimum grade thresholds set by the Ministry of Higher Education. Additionally, a limited percentage of top-ranking graduates from technical institutes, as well as a defined percentage of graduates from the industrial branch of vocational secondary schools, may be accepted through direct admission as determined by the Ministry. These candidates must fulfill the academic and administrative requirements stipulated by the institution and relevant regulatory authorities.

14. The most important sources of information about the program

1. The college's official website
2. Program handbook and curriculum guide
3. Academic advisors and department office
4. Ministry of Higher Education portal
5. Orientation sessions and brochures

15. Program development plan

The program is reviewed periodically through feedback gathered from key stakeholders, including

faculty members, students, alumni, and industry partners. The review process incorporates benchmarking with national and international engineering programs, analysis of graduate performance and employability, as well as continuous updates based on technological advancements. In line with this process, the department is also committed to the development of educational laboratories and field training facilities, aiming to enhance the practical and applied aspects of the curriculum and ensure a modern learning environment that aligns with contemporary engineering education standards.

All such initiatives and activities are documented in the department's strategic plan**,** which was formally approved by the Department Council and the College Deanery at the beginning of the current academic year**,** reflecting the department's commitment to academic quality and sustainable development.

Program skills chart															
				Learning outcomes required from the program											
Level / semester	Course Code	Course Name	Essential or optional	Knowledge				Skills				Values			
				1A	2A	3A	4A	B1	B2	B3	B4	C1	C2	C3	C4
First / First	NTU100	Democracy and Human Rights	Basic								√				√
First / First	NTU101	English Language	Basic								√			√	
First / First	BCE101	Construction Materials	Core		√			√					√		
First / First	BCE102	Plain Surveying	Core	√				√						√	
First / First	BCE103	Engineering Mechanics (Static)	Core	√					√			√			
First / First	BCE104	Engineering Drawing and Descriptive Geometry	Core	√					√					√	
First / First	BCE105	Engineering Physics	Support	√										√	
First / Second	BCE106	Building Materials	Core		√			√					√		
First / Second	BCE107	Surveying-I	Core	√					√					√	
First / Second	BCE108	Engineering Geology	Support	√				√				√			
First / Second	BCE109	Engineering Mechanics (Dynamic)	Core	√					√			√			
First / Second	BCE110	Calculas-1	Core	√							√			√	
First / Second	NTU102	Computer	Core				√		√						√

First / Second	NTU103	Arabic Language	Basic								√				√
Second / First	BCE 201	Concrete Technology-I	Core		√			√				√			
Second / First	BCE 202	Strength of Materials	Core	√					√			√			
Second / First	BCE 203	Building Construction	Core				√			√		√			
Second / First	BCE 204	Surveying-II	Core	√				√						√	
Second / First	BCE 205	Probability & Statistics	Support	√						√					√
Second / First	BCE 206	Calculus-II	Core	√							√			√	
Second / First	NTU200	Crimes of Baath Party Regime in Iraq	Basic												√
Second / First	NTU201	English Language	Basic								√			√	
Second / Second	BCE 209	Concrete Technology-II	Core		√			√				√			
Second / Second	BCE 210	Solid Mechanics	Core	√					√			√			
Second / Second	BCE 211	Construction Techniques	Core				√			√		√			
Second / Second	BCE 212	Fluid Mechanics	Support	√				√					√		
Second / Second	BCE 213	Mathematics	Core	√							√			√	
Second / Second	NTU202	Computer	Core				√		√					√	
Second / Second	NTU203	Arabic Language	Basic								√				√
Second / Second	BCE 214	Practical Training-I	Core	√				√							√
Third / First	BCE 301	Concrete Technology-III	Core		√			√				√			
Third / First	BCE 302	Fundamentals of Reinforced Concrete	Core	√					√			√			
Third / First	BCE 303	Structural Analysis	Core	√					√			√			
Third / First	BCE 304	Soil Mechanics	Core	√				√				√			

Third / First	BCE 305	Pavement Engineering	Core		√			√				√			
Third / First	BCE 306	Engineering Analysis	Core	√					√			√			
Third / Second	BCE 307	Masonry Buildings	Core				√			√		√			
Third / Second	BCE 308	Construction Management	Core	√						√					√
Third / Second	BCE 309	Advanced Soil Mechanics	Core	√					√			√			
Third / Second	BCE 310	Environmental Engineering	Core	√					√				√		
Third / Second	BCE 311	Advanced Pavement Engineering	Core		√			√				√			
Third / Second	BCE 312	Numerical Analysis	Core	√					√			√			
Third / Second	BCE 313	Practical Training	Core	√				√							√
Fourth / First	BCE 401	Design of Reinforced Concrete Structures	Core	√					√			√			
Fourth / First	BCE 402	Transportation Engineering	Core	√				√					√		
Fourth / First	BCE 403	Quantity Surveying & Estimating	Core	√					√					√	
Fourth / First	BCE 404	Foundation Engineering	Core	√					√			√			
Fourth / First	BCE 405	Construction Drawing	Core	√					√					√	
Fourth / First	BCE 406	Design of Steel Structures	Core	√					√			√			
Fourth / First	BCE 407	Innovative Project- I	Core	√					√						√
Fourth / Second	BCE 408	Materials For Heritage Buildings	Core		√			√					√		
Fourth / Second	BCE 409	Advanced Foundation Engineering	Core	√					√			√			

Fourth / Second	BCE 410	Safety in Construction	Support	√						√		√			
Fourth / Second	BCE 411	Computer Aided Design of Structure	Core	√					√			√			
Fourth / Second	BCE 412	Repairs & Rehabilitation of Structures	Core	√					√					√	
Fourth / Second	BEC 413	Sustainable Construction Materials	Core				√	√						√	
Fourth / Second	BEC 414	Innovative Project-II	Core	√					√						√

Course description (Level 1, 2, 3 and 4)

Module 1

Code	Course/Module Title	ECTS	Semester
BCE101	CONSTRUCTION MATERIALS	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	66
Description			
This course introduces students to the fundamental properties of construction materials, including their physical, mechanical, and chemical characteristics. Students will learn about the standard specifications for these materials, as well as the standardized testing methods used to evaluate their performance. The course emphasizes understanding the selection, application, and quality control of construction materials in various building and infrastructure projects, preparing students to assess material suitability and performance in real-world scenarios.			

Module 2

Code	Course/Module Title	ECTS	Semester
BCE 102	PLANE SURVEYING	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	66
Description			
Understanding how to determine points, distances, and land areas. Familiarity with surveying instruments related to the practical aspect. Understanding the fundamentals of obstacles in field. Understanding how to calculate the lengths of traverses.			

Module 3

Code	Course/Module Title	ECTS	Semester
BCE103	ENGINEERING MECHANICS (STATIC)	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
5	8	91	59
Description			
Engineering Mechanics (Statics) is a fundamental course in the field of engineering that focuses on the study of forces and their effects on objects at rest. This course provides the foundational principles necessary for analyzing and understanding the equilibrium of rigid bodies under various force systems.			

Module 4

Code	Course/Module Title	ECTS	Semester
BCE104	Engineering drawing and descriptive geometry	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	6	95	30
Description			
The Engineering Drawing course is a fundamental part of the core subjects in engineering specializations. It aims to teach students how to accurately and systematically express engineering ideas and designs through drawings. The course relies on specific tools and principles for drawing shapes, as drawing is considered the common visual language between engineers and technicians. Computers, particularly AutoCAD software, have been used to teach students engineering drawing and descriptive geometry.			

Module 5

Code	Course/Module Title	ECTS	Semester
BCE105	ENGINEERING PHYSICS	3	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		50	25
Description			
Engineering Physics is an interdisciplinary field that blends the fundamental principles of physics with practical engineering applications. It focuses on understanding the physical laws that govern technological systems while applying this knowledge to design and develop advanced technologies			

Module 6

Code	Course/Module Title	ECTS	Semester
NTU100	DEMOCRACY & HUMAN RIGHTS	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
The Human Rights and Democracy course explores the foundational principles, practices, an democracy and human rights, focusing on how democratic systems promote individual freedoms, political participation, and social justice. Students engage with case studies on human rights violations, democratic movements, and policy-making, gaining insights into the global struggle for equality, justice, and democratic governance in diverse political contexts.			

Module 7

Code	Course/Module Title	ECTS	Semester
NTU 101	ENGLISH LANGUAGE	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
To develop problem solving skills mainly speaking, reading, writing and listening skills and to understand the English language as a foreign language through the application of many techniques. To understand the			

general principles of the English language. This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies. This is the basic subject for writing and speaking English well. To understand how to build a correct English sentence.

Module 8

Code	Course/Module Title	ECTS	Semester
BCE106	BUILDING MATERIALS	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	66
Description			
This course equips students with a comprehensive understanding of the properties and characteristics of essential building materials used in construction. Students will explore material behavior, including strength, durability, and environmental impact, along with the corresponding standard specifications that govern their use. Emphasis is placed on the standardized testing methods required to evaluate material quality and performance. Through this course, students will gain the skills needed to select appropriate materials for various construction applications and ensure compliance with industry standards.			

Module 9

Code	Course/Module Title	ECTS	Semester
BCE 107	SURVEYING-I	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	42
Description			
Understanding how to determine level of points, horizontal distances, and elevations of points Familiarity with surveying instruments related to the practical aspect. Understanding how to draw contour map. Understanding how to sketch cross sections and profiles of construction. Understanding the mathematical methods of cut and fill volumes.			

Module 10

Code	Course/Module Title	ECTS	Semester
BCE108	ENGINEERING GEOLOGY	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	54	21
Description			
This course provides students with a thorough understanding of geological processes and their impact on the environment and engineering projects. Students will explore key geological phenomena such as erosion, weathering, earthquakes, and landslides, gaining insights into how these processes influence site conditions. A strong emphasis is placed on geological risk assessment, enabling students to identify and evaluate potential hazards like landslides, groundwater seepage, and seismic activity at project sites. Additionally, students will learn how to select suitable sites for engineering projects by considering geological factors, ensuring the long-term stability and performance of structures.			

Module 11

Code	Course/Module Title	ECTS	Semester
BCE109	ENGINEERING MECHANICS (DYNAMIC)	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	8	76	74
Description			
The Engineering Mechanics (Dynamics) course focuses on the motion of objects and the forces that cause this motion. It covers the fundamental principles of kinematics and kinetics, examining the behavior of particles and rigid bodies in motion under various forces. Key topics include Newton's laws, work-energy principles, impulse-momentum relationships, and the analysis of mechanical systems in motion. Through problem-solving and real-world applications, students learn how to predict, analyze, and control dynamic systems in engineering contexts such as machinery, vehicles, and structural components.			

Module 12

Code	Course/Module Title	ECTS	Semester
BCE110	CALCULAS-1	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	8	74	76
Description			
This course is designed to enhance students' logical thinking and systematic problem-solving skills, with a focus on applying these abilities to engineering challenges. It provides a strong foundation in essential mathematical concepts such as calculus, algebra, and analytical geometry, preparing students for more advanced engineering courses. The course emphasizes the use of mathematical tools for analyzing and solving engineering problems, including structural design and material calculations. Additionally, students will develop the ability to apply mathematics in drafting engineering diagrams and analyzing complex geometric shapes, supporting their overall engineering proficiency.			

Module 13

Code	Course/Module Title	ECTS	Semester
NTU102	COMPUTER	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	2	50	25
Description			
The Computer Principles course is the first gateway through which the student enters the world of computing and information technology. This course aims to provide students with a solid foundation for understanding the components of a computer and how it works, as well as its many applications in daily life.			

Module 14

Code	Course/Module Title	ECTS	Semester
NTU 103	ABRABIC LANGUAGE	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
Enhancing effective communication: Teaching Arabic aims to enable students to communicate effectively in the Arab environment, both in daily life and in academic and professional contexts. Enhancing research and academic skills: Learning Arabic contributes to developing research and academic writing skills for students, enabling them to actively participate in academic discussions and contribute to knowledge production. Providing job opportunities: Proficiency in Arabic is a valuable skill in the job market			

Module 15

Code	Course/Module Title	ECTS	Semester
BCE 201	CONCRETE TECHNOLOGY-I	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	41
Description			
Concrete Technology is a comprehensive course that explores the properties, composition, and applications of concrete. It covers key components such as cement, aggregates, water, and admixtures, along with various types of cement and their manufacturing processes. Students will learn about the role of each component in concrete mixes,			

Module 16

Code	Course/Module Title	ECTS	Semester
BCE 202	STRENGTH OF MATERIALS	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	66	59
Description			
Deepen understanding of fundamental principles of material strength: The course aims to enable students to understand and analyze the behavior of materials under different forces. Develop the ability to analyze engineering systems: The course aims to enhance students' ability to analyze and design structural systems that meet strength and stiffness requirements. Stress and Strain Analysis: The course teaches students how to calculate the stresses and strains experienced by materials due to applied forces. Enhance engineering thinking: Students are trained to think logically and systematically to solve engineering problems related to material strength. Link theoretical concepts with practical applications: The course links theoretical material strength principles with practical solutions in engineering applications			

Module 17

Code	Course/Module Title	ECTS	Semester
BCE 203	BUILDING CONSTRUCTION	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	54	46
Description			
Building Construction is a foundational course that introduces students to the principles and techniques used in constructing buildings. It covers key topics such as construction materials, structural systems, foundations, walls, roofs, and finishing techniques.			

Module 18

Code	Course/Module Title	ECTS	Semester
BCE 204	SURVEYING-II	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	41
Description			
Surveying-II is an advanced course that builds on the fundamentals of land surveying, focusing on modern techniques and tools used in the field. The course covers topics such as total station usage, curves, and surveying for construction projects.			

Module 19

Code	Course/Module Title	ECTS	Semester
BCE 205	PROBABILITY & STATISTICS	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	54	46
Description			
The Probability & Statistics course introduces fundamental concepts for analyzing data and making decisions under uncertainty. The course covers topics such as probability theory, random variables, probability distributions, statistical inference, hypothesis testing, confidence intervals, and regression analysis. Students learn methods for organizing and interpreting data, as well as applying statistical tools to real-world problems across various fields, including engineering, business, and social sciences. The course emphasizes both theoretical understanding and practical applications, preparing students to use probability and statistics in research, decision-making, and data analysis.			

Module 20

Code	Course/Module Title	ECTS	Semester
BCE 206	CALCULAS-II	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		106	19
Description			
Understanding multiple integrals and their applications , curves using polar coordinates , Calculating areas and volumes in cylindrical and spherical coordinates, Vector calculations Unit vectors and orthogonal vectors			

Module 21

Code	Course/Module Title	ECTS	Semester
NTU 200	CRIMES of BAATH PARTY REGIME in IRAQ	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
The course Crimes of the Ba'ath Party examines the crimes and violations committed by the Ba'ath Party during its rule in Iraq and Syria. It focuses on the historical and political analysis of these crimes, including crimes against humanity, genocide, political persecution, and human rights violations. The course reviews the international and local laws addressing these crimes, as well as the role played by judicial institutions in prosecuting those responsible. It aims to enhance critical understanding of political history and highlight the importance of transitional justice in post-conflict settings.			

Module 22

Code	Course/Module Title	ECTS	Semester
NTU 201	ENGLISH LANGUAGE	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
To develop problem solving skills mainly speaking, reading, writing and listening skills and to understand the English language as a foreign language through the application of many techniques. To understand the general principles of the English language. This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies. This is the basic subject for writing and speaking English well. To understand how to build a correct English sentence.			

Module 23

Code	Course/Module Title	ECTS	Semester
BCE 209	CONCRETE TECHNOLOGY-II	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	84	66
Description			
Concrete Technology is a comprehensive course that explores the properties, composition, and applications of concrete. It covers key components such as cement, aggregates, water, and admixtures, along with various types of cement and their manufacturing processes. Students will learn about the role of each component in concrete mixes, as well as modern techniques for improving concrete performance and durability. The course prepares learners for practical application in construction and material science fields.			

Module 24

Code	Course/Module Title	ECTS	Semester
BCE 210	SOLID MECHANICS	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	12	73	77
Description			
Deepen understanding of fundamental principles of material strength: The course aims to enable students to understand and analyze the behavior of materials under different forces. Develop the ability to analyze engineering systems: The course aims to enhance students' ability to analyze and design structural systems that meet strength and stiffness requirements. Stress and Strain Analysis: The course teaches students how to calculate the stresses and strains experienced by materials due to applied forces. Enhance engineering thinking: Students are trained to think logically and systematically to solve engineering problems related to material strength. Link theoretical concepts with practical applications: The course links theoretical material strength principles with practical solutions in engineering applications			

Module 25

Code	Course/Module Title	ECTS	Semester
BCE 211	CONSTRUCTION TECHNIQUES	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	54	46
Description			
The Construction Techniques course provides students with an overview of various methods and practices used in the construction industry. It covers essential topics such as project planning, site management, construction materials, structural systems, and construction safety. Students learn about different construction methods, including traditional and modern techniques, as well as the use of technology and equipment in construction processes. Through practical exercises and case studies, the course emphasizes the importance of efficient and sustainable construction practices, preparing students for roles in project management, site supervision, and construction engineering.			

Module 26

Code	Course/Module Title	ECTS	Semester
BCE 212	FLUID MECHANICS	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	69	56
Description			
Fluid Mechanics is a fundamental course that explores the behavior of fluids, both at rest and in motion. Key topics include fluid properties, fluid statics, fluid dynamics, flow through pipes, and open channel flow. The course introduces concepts such as Bernoulli's principle, continuity equation, and flow measurement techniques. Through theoretical understanding and practical applications, students will learn to analyze fluid systems, which is essential for various fields, including civil, mechanical, and environmental engineering.			

Module 27

Code	Course/Module Title	ECTS	Semester
BCE 213	MATHEMATICS	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	5	85	40
Description			
This course focuses on developing a deep understanding of first-order linear differential equations and their applications. Students will learn to solve various types of differential equations, including separable, homogeneous, exact, and inexact forms. The course also covers methods for solving differential equations with constant coefficients. Emphasis is placed on applying these techniques to solve practical engineering problems, equipping students with the mathematical tools necessary for modeling and analyzing real-world engineering systems and processes.			

Module 28

Code	Course/Module Title	ECTS	Semester
NTU 202	COMPUTER	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	3	50	25
Description			
This course introduces students to core areas of modern computing: networking**,** e-commerce**,** computer troubleshooting**,** and artificial intelligence (AI)**.** Students will learn how computer network's function, including types, components, and security basics, and develop the ability to troubleshoot common network issues. The course also covers digital banking services and online payment systems, providing insights into e-commerce infrastructure and digital marketing. Students will gain practical skills in identifying and resolving hardware and software problems, enhancing their problem-solving abilities. The AI section explores the fundamentals, real-world applications in various industries, societal impact, and ethical concerns, along with emerging trends in the field. By the end of the course, students will have a well-rounded understanding of key technologies shaping the digital world, with strong critical thinking and technical skills relevant to both academic and professional environments.			

Module 29

Code	Course/Module Title	ECTS	Semester
NTU 201	ABRABIC LANGUAGE	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
Enhancing effective communication: Teaching Arabic aims to enable students to communicate effectively in the Arab environment, both in daily life and in academic and professional contexts. Enhancing research and academic skills: Learning Arabic contributes to developing research and academic writing skills for students, enabling them to actively participate in academic discussions and contribute to knowledge production. Providing job opportunities: Proficiency in Arabic is a valuable skill in the job market			

Module 30

Code	Course/Module Title	ECTS	Semester
BCE 214	PRACTICAL TRAINING-I	-	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	`		
Description			
Practical training in building & construction engineering (site work).			

Module 31

Code	Course/Module Title	ECTS	Semester
BCE 301	CONCRETE TECHNOLOGY-III	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	59	56
Description			
Concrete Technology III is an advanced course that delves deeper into the properties and applications of concrete in construction. Building on previous knowledge, this course covers specialized topics such as advanced concrete mix design, high-performance concrete, and the use of supplementary cementitious materials. Students will explore durability, shrinkage, and cracking behavior, as well as innovative techniques for testing and evaluating concrete performance. The course also emphasizes sustainable practices and the latest advancements in concrete technology, equipping students with the expertise needed for complex construction projects and research in the field			

Module 32

Code	Course/Module Title	ECTS	Semester
BCE 302	FUNDAMENTALS OF REINFORCED CONCRETE	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	12	73	77

Description
Fundamentals of Reinforced Concrete is an introductory course that focuses on the principles and design of reinforced concrete structures. Students will learn about the behavior of concrete and steel reinforcement under various loads, the principles of structural analysis, and the importance of material properties.

Module 33

Code	Course/Module Title	ECTS	Semester
BCE 303	STRUCTURAL ANALYSIS	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	12	59	56
Description			
Structural Analysis is a critical course that focuses on the methods and principles used to analyze the stability and strength of structures. Students will learn to evaluate various structural systems, including beams, trusses, and frames, under different load conditions. The course covers essential topics such as static and dynamic analysis, methods of equilibrium, influence lines, and virtual work. Emphasizing both theoretical concepts and practical applications, students will develop the skills needed to assess structural integrity and design safe, efficient structures in civil engineering and architecture.			

Module 34

Code	Course/Module Title	ECTS	Semester
BCE 304	SOIL MECHANICS	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	66	34
Description			
This course provides students with a fundamental understanding of soil, including its formation, classification, and key engineering properties. Students will explore soil behavior under various stress conditions and the impact of water flow within the soil. The course also covers the use of soil as a construction material in engineering projects. In addition, students will gain practical knowledge of the various testing methods used to assess soil properties in both laboratory and field settings. This comprehensive study of soil mechanics will prepare students to evaluate soil suitability for construction and infrastructure development.			

Module 35

Code	Course/Module Title	ECTS	Semester
BCE 305	PAVEMENT ENGINEERING	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	66	34
Description			
The student must learn the geometrical engineering design of highways, The structural design of flexible & rigid pavements. The student must learn also, All the site works that may be needed for road construction & maintenance of pavements. The student can be able to accomplish the important tests of soil layers, asphalt and concrete pavements as well as he will have an important information about airport & railway engineering.			

Module 36

Code	Course/Module Title	ECTS	Semester
BCE 306	ENGINEERING ANALYSIS	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		54	46
Description			
The course provides students with the knowledge to solve various types of ordinary and differential equations, numerical analyses, and advanced theories in mathematics and their applications in construction engineering.			

Module 37

Code	Course/Module Title	ECTS	Semester
BCE 307	MASONRY BUILDINGS	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4		68	82
Description			
This course focuses on the mechanical behavior of masonry structures under various loading conditions. It introduces students to both the working stress and limit state approaches for analyzing and designing unreinforced, reinforced, and confined masonry structures subjected to gravity and lateral loads, including earthquake forces. Additionally, the course covers the behavior of masonry infill walls and provides an overview of methods for assessing and strengthening existing masonry buildings. Through this course, students will gain the skills needed to design and evaluate masonry structures for durability and resilience against different loading scenarios.			

Module 38

Code	Course/Module Title	ECTS	Semester
BCE 308	CONSTRUCTION MANAGEMENT	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4		68	57
Description			
To establish an understanding of how construction industry operates including the project life cycle and participants involved. To introduce the principles of project management and its functions. To provide the students with essentials of construction management including procurement, planning, estimating, and scheduling. To familiarize students with measuring and managing performance in construction. To present and discuss some tools to improve performance at project and organizational level. And To increase the awareness of students on the emerging issues and advanced processes in construction			

Module 39

Code	Course/Module Title	ECTS	Semester
BCE 309	ADVANCED SOIL MECHANICS	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	66	34
Description			
The student should understand the nature of soil, its formation, classification and engineering properties. The student should also know the behavior of soil under stresses, the effect of water flowing inside the soil, the using of soil as a construction material. The different methods used for testing the soil in laboratory and field should also be given to the student.			

Module 40

Code	Course/Module Title	ECTS	Semester
BCE 310	ENVIRONMENTAL ENGINEERING	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	69	56
Description			
The Environmental Engineering course focuses on the application of engineering principles to address environmental challenges and promote sustainability. It covers key topics such as water and wastewater treatment, air quality management, solid waste management, and environmental impact assessment. Students learn to analyze and design systems for pollution control, resource management, and remediation of contaminated sites. The course emphasizes the importance of regulatory frameworks, sustainable practices, and emerging technologies in protecting the environment. Through hands-on projects and case studies, students develop problem-solving skills essential for tackling complex environmental issues in various sectors.			

Module 41

Code	Course/Module Title	ECTS	Semester
BCE 311	ADVANCED PAVEMENT ENGINEERING	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		53	72
Description			
The student must learn the geometrical engineering design of highways, The structural design of flexible & rigid pavements. The student must learn also, All the site works that may be needed for road construction & maintenance of pavements. The student can be able to accomplish the important tests of soil layers, asphalt and concrete pavements as well as he will have an important information about airport & railway engineering.			

Module 42

Code	Course/Module Title	ECTS	Semester
BCE 312	NUMERICAL ANALYSIS	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	6	60	65
Description			
The course provides students with the knowledge to solve various types of ordinary and differential equations, numerical analyses, and advanced theories in mathematics and their applications in construction engineering.			

Module 43

Code	Course/Module Title	ECTS	Semester
BCE 313	PRACTICAL TRAINING		2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
Description			
Practical training in building & construction engineering (site work).			

Module 44

Code	Course/Module Title	ECTS	Semester
BCE 401	DESIGN of REINFORCED CONCRETE STRUCTURES	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	72	28
Description			
Upon successful completion of this course, students will be equipped with the knowledge and skills to apply the American Concrete Institute (ACI 318) design specifications to real-world projects. The course begins with an introduction to material properties and key design methods, including working stress and ultimate strength methods. Students will learn to apply strain compatibility and equilibrium concepts to calculate the strength of reinforced concrete (RC) members.			

Module 45

Code	Course/Module Title	ECTS	Semester
BCE 402	TRANSPORTATION ENGINEERING	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		56	44
Description			
The Transportation Engineering programme aims to provide students with comprehensive knowledge and skills in planning, design, and management of transportation systems, including highways, railways, and airports. Emphasizing theoretical concepts and practical applications, the programme prepares students to understand the principles of transportation engineering and apply them to address contemporary transportation challenges. Through hands-on experiences, fieldwork, and personal development planning, students will develop the expertise necessary to contribute to the development of safe, efficient, and sustainable transportation infrastructure.			

Module 46

Code	Course/Module Title	ECTS	Semester
BCE 403	QUANTITY SURVEYING & ESTIMATING	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	56	43
Description			
The student will be able to make approximate and detailed estimates of buildings, specify the proper method of measurement, and do the rate analysis for different items of works. He will also be able to write the technical specifications for various civil engineering works. Finally, he will get thorough knowledge on the types of contracts and the general and special conditions related to them.			

Module 47

Code	Course/Module Title	ECTS	Semester
BCE 404	FOUNDATION ENGINEERING	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	82	43
Description			
Foundation Engineering is a specialized course that explores the principles and practices involved in designing and constructing foundations for various types of structures. Students will learn about soil mechanics, site investigation techniques, and the behavior of different foundation types, including shallow and deep foundations. The course covers key topics such as bearing capacity, settlement analysis, and foundation design considerations, as well as techniques for mitigating soil-related issues. Through a combination of theoretical knowledge and practical applications, students will gain the expertise necessary to ensure the stability and safety of structures supported by their foundations .			

Module 48

Code	Course/Module Title	ECTS	Semester
BCE 405	CONSTRUCTION DRAWING	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	49	51
Description			
In this course, students will learn to create detailed drawings for various civil engineering projects, including structural drawings for both concrete and steel structures. Students will also develop the ability to interpret, analyze, and execute previously drafted project plans and blueprints. The course emphasizes the importance of precision in drafting and the application of industry-standard techniques, preparing students to produce accurate and clear construction drawings essential for the successful execution of civil engineering projects.			

Module 49

Code	Course/Module Title	ECTS	Semester
BCE 406	DESIGN of STEEL STRUCTURES	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
5		82	43
Description			
Upon successful completion of this course, students will gain a comprehensive understanding of the behavior and design of various structural steel members and their connections. The course provides practical experience in designing simple steel structures, emphasizing key principles such as load distribution, material properties, and safety considerations. Students will also learn to apply relevant design codes and standards to ensure the structural integrity and efficiency of steel structures in real-world applications.			

Module 50

Code	Course/Module Title	ECTS	Semester
BCE 407	INOVATIVE PROJECT -I	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	2	49	45
Description			
The student will be able to design, calculate quantities, and plot the architectural, constructional, sanitary, & electrical plans & details for a certain project in civil engineering.			

Module 51

Code	Course/Module Title	ECTS	Semester
BCE 408	MATERIALS FOR HERITAGE BUILDINGS	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		49	73
Description			
By the completion of the course, the student is familiar with the fundamental methodological tools needed to choose and use materials and technologies for the preservation of historic building materials in a way that maximizes their efficacy, compatibility, and longevity.			

Module 52

Code	Course/Module Title	ECTS	Semester
BCE 409	ADVANCED FOUNDATION ENGINEERING	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	82	43
Description			
In this course, students will delve into the fundamentals of foundation engineering, focusing on essential topics such as soil investigation techniques, bearing capacity calculations, and the selection and design of various foundation types. Students will explore advanced concepts in foundation design, including shallow and deep foundations, and understand the impact of soil characteristics on foundation performance. Through practical applications and case studies, this course equips students with the knowledge and skills necessary to design safe and effective foundation systems for a wide range of engineering projects.			

Module 53

Code	Course/Module Title	ECTS	Semester
BCE 410	SAFETY IN CONSTRUCTION	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		35	15
Description			
Safety in Construction is an essential course that focuses on the principles and practices necessary to ensure safety on construction sites. Students will learn about common hazards, risk assessment, and safety regulations relevant to the construction industry. The course covers topics such as personal protective equipment (PPE), safe work practices, emergency response procedures, and the importance of safety management systems. Through case studies and practical training, students will develop the skills to identify, evaluate, and mitigate risks, fostering a culture of safety that protects workers and enhances project efficiency.			

Module 54

Code	Course/Module Title	ECTS	Semester
BCE 411	COMPUTER AIDED DESIGN OF STRUCTURE	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	46
Description			
The main objective of this program is to train the student in the use of computers and creating a computer code as well as using commercially available software for the design of Civil Engineering structures.			

Module 55

Code	Course/Module Title	ECTS	Semester
BCE 412	REPAIRS & REHABILITATION OF STRUCTURES	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		53	72
Description			
Repairs and Rehabilitation of Structures is a focused course that explores the techniques and methodologies used to assess, repair, and restore existing structures. Students will learn about common causes of structural deterioration, inspection methods, and the evaluation of structural integrity. The course covers various repair materials and techniques, including concrete restoration, strengthening methods, and retrofitting strategies for enhancing durability and safety. Emphasizing practical applications and case studies, this course equips students with the skills needed to effectively manage repair and rehabilitation projects in civil engineering and construction.			

Module 56

Code	Course/Module Title	ECTS	Semester
BCE 413	SUSTAINABLE CONSTRUCTION MATERIALS	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3		53	72
Description			
This course is intended for senior technical construction engineering students and graduate students. The main objective of this course is to introduce students to the concepts of sustainability in construction and how construction materials impact sustainability. Also, the students are introduced to concepts of carbon-foot print and embodied energy of construction materials. In addition, concepts of Life-Cycle Assessment (LCA) and Cost Analysis are introduced to students and case studies are discussed to highlight the role of LCA in sustainable construction.			

Module 57

Code	Course/Module Title	ECTS	Semester
BCE 414	INOVATIVE PROJECT -II	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
	2	49	45
Description			
The student will be able to design, calculate quantities, and plot the architectural, constructional, sanitary, & electrical plans & details for a certain project in civil engineering.			

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