

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:

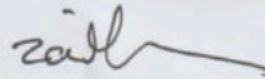


Assist Prof. Dr. Mohammed S. Jarjees

Dean's Assistant for Scientific Affairs

Date: 15 /10/ 2024

Signature:



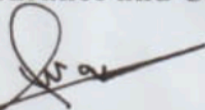
Dr. Zaid Hazim Hussein

Head of Department

Date: 15 /10/ 2024

The document has been reviewed by the
Quality Assurance and University Performance Manager

Signature:



Assist. Lecturer Warqaa Hashim Mahmood

Date: 15 /10/2024

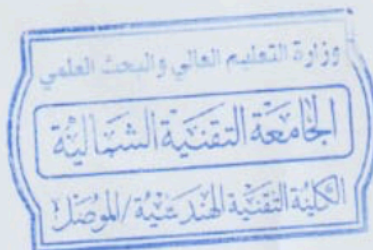
Approval of the Dean

Signature:



Prof. Dr. Majid Kh. Najim

Date: 15/10/2024



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

The Department of Building and Construction Techniques Engineering is committed to providing modern and advanced technical education to undergraduate, graduate, and doctoral students. It focuses on equipping them with advanced technical knowledge and expertise. The department also promotes scientific research and encourages the conduct of applied studies and research that contribute to the development of construction technologies and solving contemporary engineering challenges. The department seeks to foster creativity and innovation among students and graduates while considering cultural requirements and architectural heritage, as well as meeting economic needs and enhancing job opportunities for graduates.

3. Program Goals

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

Program of the Ministry of Higher Education and Scientific Research

5. Other external influences

None

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	Human Rights and Democracy	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	Calculus-I	Theoretical	4
First / Second	NTU102	Computer Principles	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	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
			Practical	2
Second / Second	BCE 213	Mathematics	Theoretical	3

Second / Second	NTU201	Professional Ethics	Theoretical	2
Second / Second	NTU202	Computer Applications	Practical	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 Concrete	Theoretical	4
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

1. **Design and supervision** of the execution of all tasks related to engineering projects, such as buildings, bridges, roads, airports, tunnels, dams, hydraulic structures, prefabricated building units, and pre-stressed concrete units.
2. **Reading, preparing, and executing** structural and architectural drawings, calculating quantities and costs, and drafting contracts for projects, utilizing computers extensively.
3. **Organizing and managing various construction projects** using modern methods and computers, with a thorough understanding of professional techniques in construction works, in addition to studying construction machinery in terms of productivity, operating costs, and methods of use.
4. **Maintenance and rehabilitation** of buildings, roads, and other projects, with attention to **environmental pollution control** as a contemporary issue.
5. **Conducting all field, site, and laboratory tests** (destructive and non-destructive) on all construction materials and soil, analyzing the results, and comparing them with standard specifications.
6. **Handling modern construction materials** and new alternatives available locally, as well as additives in concrete works and soil stabilization for important projects.
7. **Extensive use of modern surveying equipment** to prepare topographic maps and diagrams, divide land, determine road paths, and draw longitudinal and cross-sectional profiles.

Skills

1. Ability to deduce and analyze.
2. Self-learning and lifelong education.
3. Leadership skills and taking responsibility.
4. Computer and internet skills.

5. Communication skills, such as English language and presentation.	
Value	
<ol style="list-style-type: none"> 1. Develop students' abilities to share ideas. 2. Enhance the essential skills necessary for the design, implementation, and maintenance of infrastructure. 3. Provide a broad understanding of the problems that may arise in professional practice, including teamwork, leadership, occupational safety, professional conduct and ethics, and economic feasibility. 4. Ability to analyze, deduce, and solve problems in an engineering manner according to the required standards. 	<p>Summer and vocational training, laboratories, scientific films and videos (electronic and in-person), blended learning, and graduation projects.</p>

9. Teaching and learning strategies
<ol style="list-style-type: none"> 1. Detailed explanation of the course material to students. 2. Engaging students in solving mathematical problems. 3. Discussion and dialogue on topics related to the subject. 4. Daily quizzes, midterm exams, final exams, weekly reports as part of the course, and descriptive homework assignments.

10. Evaluation methods
<ul style="list-style-type: none"> - Daily quizzes, midterm exams, final exams, weekly reports as part of the course, and descriptive homework assignments.

11. Education institution						
Faculty members						
Scientific rank	Specialization		Special requirements /skills (if any)		Preparing the teaching staff	
	General	Private			Permanent staff	lecturer
Prof	0	2			1	1
Assist Prof	2	5			4	3
Lecturer	4	8			9	3
Assist Lecturer	3	5			6	2

Professional development
Orienting new faculty members
<ol style="list-style-type: none"> 1. Ability to deduce and analyze. 2. Self-learning and lifelong education. 3. Leadership skills and taking responsibility. 4. Computer and internet skills. Communication skills, such as English language and presentation.
Professional development for faculty members
<ol style="list-style-type: none"> 1. In-house training courses. 2. External training courses. 3. Scientific research, seminars, and academic conferences. 4. Self-directed learning.

12. Acceptance standard
<ol style="list-style-type: none"> 1. Scientific branch 2. Vocational study 3. The grade

13. The most important sources of information about the program
Books. Supplementary resources (Internet) Scientific research and the latest developments

14. Program development plan
Reviewing the experiences of peer universities and colleges, both Arab and foreign, and benefiting from their advancements.

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	NTU101	English Language	Basic			√	√	√	√	√	√	√		√	
First / First	NTU100	Human Rights and Democracy	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	Calculus-1	Core	√	√	√	√	√		√	√	√	√		
First / Second	NTU102	Computer Principles	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	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	NTU201	Professional Ethics	Basic	√	√	√	√	√		√	√	√	√		
Second / Second	NTU202	Computer Applications	Core			√					√	√		√	
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	√	√	√	√	√		√	√	√	√		√

- Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation.

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			
<p>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.</p>			

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			
<p>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.</p>			

Module 3

Code	Course/Module Title	ECTS	Semester
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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	HUMAN RIGHTS and DEMOCRACY	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, and challenges of human 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 100	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			
<p>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.</p>			

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			
<p>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.</p>			

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			
<p>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.</p>			

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			
<p>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.</p>			

Module 12

Code	Course/Module Title	ECTS	Semester
BCE110	CALCULAS-1	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	8	74	76

Description
<p>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.</p>

Module 13

Code	Course/Module Title	ECTS	Semester
NTU102	COMPUTER PRINCIPLES	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	2	39	11
Description			
<p>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.</p>			

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	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		35	15
Description			
<p>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.</p>			

Module 22

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			
<p>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.</p>			

Module 23

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			
<p>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</p>			

Module 24

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			
<p>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.</p>			

Module 25

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 26

Code	Course/Module Title	ECTS	Semester
BCE 213	MATHEMATICS	5	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 27

Code	Course/Module Title	ECTS	Semester
NTU 201	Professional Ethics	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		35	15
Description			
Developing students' true conviction of the importance of moral commitment, developing their moral judgment skills and their preparations for moral commitment at work after graduation. Understanding technical foundations: This course aims to introduce Northern Technology students to professional ethics according to their technical specialization. Developing design and development skills: The student acquires all the			

professional ethical rules that enhance their commitment to them, in order to enable them to solve the ethical problems that they will face in their expected field of work after graduation.

Module 28

Code	Course/Module Title	ECTS	Semester
NTU 202	Computer Application	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	2	39	11
Description			
The Computer Applications course introduces students to the fundamental concepts and skills needed to effectively use various software applications in personal and professional contexts. Topics include word processing, spreadsheets, databases, presentation software, and graphic design tools. Students gain hands-on experience in utilizing these applications for tasks such as document creation, data analysis, project management, and digital communication.			

Module 29

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 30

Code	Course/Module Title	ECTS	Semester
BCE 301	CONCRETE TECHNOLOGY-III	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	84	66
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 31

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 32

Code	Course/Module Title	ECTS	Semester
BCE 303	STRUCTURAL ANALYSIS	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	12	73	77
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 33

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 34

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 35

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 36

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			
<p>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.</p>			

Module 37

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			
<p>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</p>			

Module 38

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 39

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 40

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 41

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 42

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 43

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 44

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 45

Code	Course/Module Title	ECTS	Semester
BCE 403	QUANTITY SURVEYING & ESTIMATING	5	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	82	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 46

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 47

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 48

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 49

Code	Course/Module Title	ECTS	Semester
BCE 407	INOVATIVE PROJECT -I	3	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	2	30	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 50

Code	Course/Module Title	ECTS	Semester
BCE 408	MATERIALS FOR HERITAGE BUILDINGS	5	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3		52	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 51

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 52

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 53

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 54

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 55

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 56

Code	Course/Module Title	ECTS	Semester
BCE 414	INOVATIVE PROJECT -II	3	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	2	30	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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