

Northern Technical University

الجامعة التقنية الشمالية



Bachelor's degree (B.Sc.) – Building & Construction
Engineering Technology

بكالوريوس هندسة تقنيات البناء والانشاءات



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1. Mission & Vision Statement

Vision Statement

The Department of Building and Construction Engineering Technology aspires to be a leading center in engineering education and applied research, producing qualified and innovative technical professionals capable of driving transformation in the construction sector in line with global advancements and contributing to the goals of sustainable development.

Mission Statement

The department is committed to providing high-quality technical education that integrates theoretical knowledge with practical application, while promoting scientific research and innovation in modern construction technologies. It aims to prepare graduates with the competence and professionalism required to meet the needs of the local and regional markets and to actively contribute to infrastructure development and community service

2. Program Specification

Programme code:	BCE	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

The department of Building and Construction Engineering Techniques is broad and essential, offering students a comprehensive education that emphasizes the entire construction process—from



designing safe, efficient structures to managing complex projects and ensuring quality compliance. This program appeals to a range of interests: for some, it's the opportunity to work directly on essential infrastructure projects, while for others, it's a path to specialization in areas such as structural materials, project management, or sustainable construction methods. The curriculum is structured to build foundational knowledge at Level 1, where students gain a solid grounding in core engineering principles. At Level 2, students engage with program-specific topics, preparing them for advanced, research-informed modules at Levels 3 and 4. Graduates of this program are equipped to contribute to the labor market as skilled technical engineers, able to design, execute, and maintain various civil engineering projects.

At Levels 2, 3, and 4, students are encouraged to select modules that reflect the diversity and complexity of civil engineering projects—ranging from building design and material testing to project management and construction technology. This flexibility enables students to shape their education around their career interests, with guidance from personal tutors. Research and practical experience are integrated from the start, with hands-on labs, field courses, and research seminars that support the department's commitment to experiential learning. Level 1 includes essential workshops, while advanced levels offer opportunities for independent projects, whether field-based, laboratory-based, or analysis-driven, fostering critical thinking and problem-solving skills in line with the department's mission of producing competent, innovative engineers.

3. Program Objectives

1. Provide comprehensive academic programs leading to Bachelor's, Master's, and Ph.D. degrees in Building and Construction Engineering Technology, 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. Student Learning Outcomes

The field of Building and Construction Engineering Technology encompasses the study, design, execution, and maintenance of infrastructure projects, with a strong emphasis on structural systems, construction materials, and project management. Graduates of this program develop a comprehensive understanding of the technical, historical, and societal dimensions of construction engineering. They acquire the ability to apply core engineering principles to analyze and solve complex, real-world construction challenges. The Department offers a Bachelor of Science in Building and Construction Techniques Engineering, preparing students with practical competencies in construction management, materials testing, and structural analysis and design. Furthermore, the Department contributes to interdisciplinary education by offering service courses to students from other academic programs, thereby fostering broader professional development. The curriculum is strategically designed to support career readiness in the construction sector, postgraduate education, and advancement into specialized technical positions.

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies



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6. Credits, Grading and GPA

Credits

NTU University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

- The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$CGPA = [(1^{st} \text{ module score} \times ECTS) + (2^{nd} \text{ module score} \times ECTS) +] / 240$$



7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE101	CONSTRUCTION MATERIALS	78	72	6.00	C	
BCE102	PLAIN SURVEYING	78	72	6.00	C	
BCE103	ENGINEERING MECHANICS (STATIC)	63	87	6.00	C	
BCE104	ENGINEERING DRAWING AND DESCRIPTIVE GEOMETRY	93	32	5.00	S	
BCE105	ENGINEERING PHYSICS	48	27	3.00	S	
NTU100	DEMOCRACY and HUMAN RIGHTS	33	17	2.00	B	
NTU101	ENGLISH LANGUAGE	33	17	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE106	BUILDING MATERIALS	78	72	6.00	C	
BCE107	SURVEYING-I	78	47	5.00	C	
BCE108	ENGINEERING GEOLOGY	48	27	3.00	S	
BCE109	ENGINEERING MECHANICS (DYNAMIC)	63	87	6.00	S	
BCE110	CALCULAS-1	63	62	5.00	S	
NTU102	COMPUTER	48	27	3.00	B	
NTU103	ARABIC LANGUAGE	33	17	2.00	B	



Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 201	CONCRETE TECHNOLOGY-I	63	62	5.00	C	
BCE 202	STRENGTH OF MATERIALS	63	62	5.00	C	
BCE 203	BUILDING CONSTRUCTION	48	52	4.00	S	
BCE 204	SURVEYING-II	78	47	5.00	C	
BCE 205	PROBABILITY & STATISTICS	48	52	4.00	S	
BCE 206	CALCULAS-II	63	62	5.00	S	
NTU200	CRIMES OF BAATH PARTY REGIME IN IRAQ	33	17	2.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 209	CONCRETE TECHNOLOGY-II	78	72	6.00	C	
BCE 210	SOLID MECHANICS	63	87	6.00	C	
BCE 211	CONSTRUCTION TECHNIQUES	48	52	4.00	S	
BCE 212	FLUID MECHANICS	64	61	5.00	S	
BCE 213	MATHEMATICS	48	52	4.00	S	
NTU202	COMPUTER	33	17	2.00	B	
NTU203	ARABIC LANGUAGE	48	27	3.00	B	
BCE 214	PRACTICAL TRAINING-I					



Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 301	CONCRETE TECHNOLOGY-III	78	47	5.00	C	
BCE 302	FUNDAMENTALS OF REINFORCED CONCRETE	63	87	6.00	C	
BCE 303	STRUCTURAL ANALYSIS	63	62	5.00	C	
BCE 304	SOIL MECHANICS	63	37	4.00	C	
BCE 305	PAVEMENT ENGINEERING	63	37	4.00	C	
BCE 306	ENGINEERING ANALYSIS	63	37	4.00	S	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 307	MASONRY BUILDINGS	63	87	6.00	C	
BCE 308	CONSTRUCTION MANAGEMENT	48	77	5.00	C	
BCE 309	ADVANCED SOIL MECHANICS	78	22	4.00	C	
BCE 310	ENVIRONMENTAL ENGINEERING	48	77	5.00	S	
BCE 311	ADVANCED PAVEMENT ENGINEERING	63	62	5.00	C	
BCE 312	NUMERICAL ANALYSIS	63	62	5.00	S	



Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 401	DESIGN OF REINFORCED CONCRETE STRUCTURES	45	55	4.00	C	
BCE 402	TRANSPORTATION ENGINEERING	33	67	4.00	C	
BCE 403	QUANTITY SURVEYING & ESTIMATING	63	37	4.00	C	
BCE 404	FOUNDATION ENGINEERING	63	62	5.00	C	
BCE 405	CONSTRUCTION DRAWING	48	52	4.00	C	
BCE 406	DESIGN OF STEEL STRUCTURES	63	62	5.00	C	
BCE 407	INNOVATIVE PROJECT- I	63	37	4.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BCE 408	MATERIALS FOR HERITAGE buildings	48	52	4.00	C	
BCE 409	ADVANCED FOUNDATION ENGINEERING	63	62	5.00	C	
BCE 410	SAFETY IN CONSTRUCTION	48	27	3.00	S	
BCE 411	COMPUTER AIDED DESIGN OF STRUCTURE	63	62	5.00	C	
BCE 412	REPAIRS & REHABILITATION OF STRUCTURES	48	52	4.00	C	
BCE 413	SUSTAINABLE CONSTRUCTION MATERIALS	48	77	5.00	C	
BCE 414	INNOVATIVE PROJECT-II	63	37	4.00	C	

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