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

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a coordinated and structured package of courses that include procedures and experiences that are organized in the form of a vocabulary of study whose main purpose is to build and refine the skills of graduates to make them qualified to meet the requirements of the labor market, which 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 are being worked on to acquire students based on the objectives of the academic program, and the importance of this description is evident because it represents the cornerstone of obtaining program accreditation and is co-written by the teaching staff under the supervision of the scientific committees in the scientific departments.

This manual, 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 developments and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual and quarterly), as well as the adoption of the description of the academic program circulated under the letter of the Department of Studies M3/2906 on 3/5/2023

regarding the programs that adopt the Bologna track as the basis for their work.

In this regard, we can only stress the importance of writing descriptions of academic programs and courses to ensure the smooth functioning of the educational process.

Concepts and Terms:

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

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

Program Vision: An ambitious vision of the future of the academic program to be a cutting-edge, inspiring, stimulating, realistic and viable program.

Program Mission: Briefly outlines the goals and activities needed to achieve them and outlines the program's development paths and directions.

Program Objectives: These are phrases that describe what the academic program intends to achieve over a specific period of time and are measurable and observable.

Curriculum Structure: All courses/subjects included in the academic program according to the approved learning system (semester, yearly, Bologna track), whether they are a requirement (ministry, university, college and scientific department) 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 and must define the learning outcomes of each course in a way that achieves the goals of the program.

Teaching and Learning Strategies: These are the strategies used by a faculty member to develop student teaching and learning, and they are plans that are

followed to reach learning goals. That is, they describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

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

Academic Program Specification Form for Colleges and Institutions

University: Northern Technical University
Institute: Technical Engineering College / Kirkuk
Department: Surveying Technical Engineering
Date of Form Completion: 2024

The Dean	Dean's Assistant for Scientific Affairs	Head of Department
Dr. Sami R Aslan	Dr. Muntadher.A.Shareef	Dr. Dler Abdullah Omar
Date: 1/11/2024	1/11/2024	

Quality Assurance and University Performance Manager: Dr. Rana Hilmi Abduljabbar
Date: 1/11 /2024

1. Program Vision

The Department of Cadastral Engineering seeks excellence, creativity and leadership in its field of engineering and scientific specialization in Iraq and the region in order to meet the renewed requirements of society coupled with rapid scientific and technological developments.

2. Program Mission

Contributing to the prosperity of society by preparing applied engineers, professional leaders, and qualified scientific research cadres with a distinguished level of knowledge and technological creativity, in order to achieve quality assurance and academic accreditation in accordance with the sober standards internationally adopted in engineering and scientific curricula, while adhering to the ethics of the engineering profession.

3. Program Objectives

1. Graduating qualified cadres to carry out ground and photographic surveying and remote sensing techniques, as well as ribbing and leveling works for natural and artificial features of the earth's surface using traditional and modern surveying devices (Total stations devices) and international navigational and cadastral footprint devices (GPS, DGPS). In addition to working on the ability of graduates to possess the skills of maintaining various cadastral devices. In addition to preparing and drawing topographical, cadasical, real estate, objective and detailed

maps. As well as using Geographic Information Systems (GIS) with the aim of building a database and producing digital maps in various fields.

2. Developing the teaching staff in the department by creating the appropriate atmosphere and urging the faculty members in the department to research scientifically, pay attention to scientific promotion, and complete their studies to obtain higher scientific degrees and higher experiences.

3. Seeking to develop the skilled and scientific capabilities of the department's engineers and technicians and placing them in development courses that positively affect their practical performance.

4. Communicating with the community through public and private sector departments and providing consultancy and engineering studies in the department's field of specialization.

4. Program Accreditation

There isn't any

5. Other External Influences

There isn't any

6. Program Structure

Reviews*	Percentage	Study Unit	Number of Courses	Program Structure
11 Basic & 2 Optional	14	24	13	**Enterprise Requirements**
Essential	18.12	31	14	**College Requirements**
29 Basic & 15Optional	67.8	116	44	**Department Requirements**
Essential			Exist	**Summer Training**
				Other

* It is possible to include notes on whether the course is basic or elective.

7. Program Description

Credit Hours		Course or course name	Course or course code	Year/Level
practical	**theoretical**			2023-2024 /First
0	1	Human rights	NTU100	
0	2	English I	NTU101	
2	1	Computer Principles	NTU102	
0	2	Math I	TECK101	
2	1	Engineering Drawing	TECK103	
0	3	Engineering Mechanics	TECK105	
6	2	Principles of Survey Engineering	SUE106	
3	1	Earth Science 1	SUE107	
0	2	Arabic Language	NTU104	
0	1	Democracy	NTU106	
2	1	Computer Principles	NTU103	

1	1	Sport (optional)	NTU105	
0	2	French (Optional)	NTU107	
0	2	Math II	TECK102	
3	0	Laboratories (Mechanical Workshops)	TECK104	
6	2	Topographic Survey	SUE109	
3	1	Earth Science 2	SUE110	
3	1	Geometric Survey Drawing	SUE111	
2	1	Principles of Civil Engineering (Optional)	SUE112	
2	1	Programming (optional)	SUE113	
				2023−2024 /sec
0	2	English II	NTU200	
0	2	Ethics	NTU201	
0	3	Math 3	TECK201	
4	2	Advanced Space I	SUE201	
3	2	Imaging Scan I	SUE202	
2	2	Engineering Survey I	SUE203	
2	1	Kinetic Engineering Mechanics (Optional)	SUE204	
2	1	GIS Principles (Optional)	SUE205	
0	3	Math 4	TECK202	
	Updated	Summer Training 1	TECK204	
0	2	Physics	TECK203	
4	2	Advanced Space II	SUE206	
3	2	Imaging Scan II	SUE207	
2	2	Engineering Survey II	SUE208	
3	2	Cartographic	SUE209	
3	1	GIS Applications (Optional)	SUE210	

3	1	Facility Scanning (Optional)	SUE211	
				2023−2024 /III
0	2	English III	NTU300	
0	3	Engineering Analytics	TECK300	
3	2	Quantitative Survey 1	SUE302	
3	2	Map Projections	SUE303	
3	2	Cadastre Survey	SUE304	
0	2	Engineering Statistics	SUE312	
3	1	Near Photogrammetry Scan (Optional)	SUE306	
3	1	Monitoring of facility deformities (optional)	SUE307	
2	1	Water Bodies Survey (Optional)	SUE405	
	Updated	Summer Internship 2	TECK302	
2	2	Numerical Analytics	TECK301	
3	2	Error Theory and Correction	SUE301	
3	2	Digital Imaging Scan	SUE308	
3	2	Cadastral Systems I	SUE309	
3	2	Quantitative Survey II	SUE311	
2	1	GNSS (optional)	SUE314	
2	1	Technical Reporting (Optional)	SUE315	
2	1	Spherical Triangles and Astronomy (Optional)	SUE407	
				2023−2024 /Fourth
0	2	English IV	NTU400	

0	3	Engineering Project Management	TECK400	
3	0	Project I	TECK401	
3	2	Cadastral Systems II	SUE401	
3	2	Remote sensing	SUE402	
3	2	Geodesy I	SUE403	
3	2	Maintenance of cadastral devices	SUE404	
2	1	Road & Traffic Engineering	SUE406	
0	2	Scientific Research Methodology	NTU410	
0	2	Engineering Economics	TECK402	
3	0	Project II	TECK403	
3	2	City Planning	SUE408	
3	2	Remote sensing applications	SUE410	
3	2	Geodesy II	SUE411	
2	2	Land laws applications	SUE412	
2	1	Land Management (Optional)	SUE413	
2	1	Modern Cadastral Programs (Optional)	SUE414	
2	1	Orbital Mechanics (Optional)	SUE415	

8. Expected Learning Outcomes of the Program

Knowledge

The Department of Survey Engineering Technologies aims to achieve a set of important knowledge goals, including:	**1- Cognitive Objectives**

1. **Understanding the basic principles**: Familiarize yourself with the basic principles of cadastral engineering and measurement methods. 2. **Technical Skills Development**: Acquire the skills necessary to use modern tools and technologies in surveying such as GPS devices and scanners. 3. **Data Analysis**: The ability to analyze and interpret spatial data and use geographic information systems (GIS) software . 4. **Practical Applications**: Understand how survey techniques are applied in fields as diverse as urban planning, environment, and civil engineering. **Problem Solving**: Develop problem-solving skills by applying theoretical knowledge in practical cases. **Sustainability Orientation**: Recognize the importance of sustainability in engineering projects and apply techniques that help with this. **Collaboration and teamwork**: Enhance the ability to work in multidisciplinary teams to achieve common goals. **Research and Development**: Encourage scientific research and develop new technologies in the field of surveying and mapping.	

These objectives aim to prepare students to be specialists capable of dealing with current and future challenges in the field of survey engineering techniques	
Skills	
Skill objectives for survey engineering include a set of skills that students need to apply knowledge effectively, including: 1. Measurement skills: Master the use of various measuring instruments, such as telescopes, GPS devices, levels, and scanners. 2. Ground Survey: The ability to perform accurate ground surveys, including measuring angles and distances. 3. Data Analysis: The skill of spatial data analysis and the use of specialized software such as Geographic Information Systems (GIS) and data analysis. 4. Mapping: The ability to create accurate and useful maps, including diagrams and analytic drawings. Software Management: Master the use of design and engineering software, such as AutoCAD and Civil 3D.	**B. Program-specific Skills Objectives**

Problem Solving: Develop critical and creative thinking skills to solve complex problems in the field of space. Effective Communication: The ability to present information and results clearly and effectively, whether written or oral. Collaboration: Working efficiently in multidisciplinary teams, enhancing the effectiveness of teamwork. Project Management: Understand the principles of project management and how to plan, implement, and monitor surveying activities. These skills help students qualify for a successful career in the field of survey engineering and its multiple applications.	
Values	
The value objectives of Survey Technology Engineering are related to the promotion of a set of core values that influence professional and ethical practices, including: 1. Integrity: Promote the importance of accuracy and honesty in the collection and analysis of spatial data, ensuring the reliability of the results. 2. Social Responsibility: Understanding the impact of surveying projects on society and the	C. Value Goals

environment, and working to achieve sustainable results. 3. Professionalism: Adherence to professional and ethical standards at work, including respect for privacy and data protection. 4. Collaboration: Promoting the values of teamwork and partnership with different disciplines and local communities to achieve common goals. Innovation: Encouraging creative thinking and innovation in the development of new technologies and effective solutions to contemporary challenges. Continuous Learning: Enhancing the value of continuing education and adapting to technological and professional developments in the field of survey engineering. Open Communication: Encourage effective and open communication with colleagues and stakeholders to ensure the exchange of knowledge and experiences. Respect for diversity: Appreciate cultural and social differences and work to promote an inclusive environment. These values help build professionals with a strong work ethic who work for the betterment of society and the environment through space techniques.	

9. Teaching and Learning Strategies

- Explain the scientific material to the students in detail.

2. Participation of students in solving mathematical problems

3- Discussion and dialogue on vocabulary related to the topic

10. Evaluation Methods

Student assessment in the Department of Survey Technologies Engineering, Kirkuk can be done through a variety of methods and methods, including:

1. Theoretical Tests: These include mid-term and end-of-semester exams, where students' theoretical knowledge in basic concepts and applications is assessed.

2. Practical Projects: Assigning students to conduct applied surveying projects that require the use of modern tools and techniques, which enhances their practical skills.

3. **Written reports: Writing reports on practical experiences or research, which helps assess their ability to document and analyze data.**

4. **Practical Tests: Conducting practical tests where students' skills in using measurement tools and conducting surveys are assessed.**

5. **Presentations: Students make presentations about their projects or research, assessing communication and presentation skills.**

6. **Classroom Participation: Assessing students' participation in classroom discussions and activities, reflecting their interaction and understanding of the material.**

7. **Continuous Assessment: The use of a continuous assessment system throughout the semester, where student performance is periodically evaluated.**

8. **Group Collaboration: Assessing students' performance on group projects, reflecting their ability to work in a team.**

9. **Self-assessment: Encourage students to evaluate themselves, which helps develop self-awareness and improve skills. These methods**

help provide a comprehensive assessment of students' abilities and skills in the field of survey technology engineering

11. Faculty

Faculty Members

Preparing the teaching staff		Special requirements/skills (if applicable)		Specialization		Academic Rank
lecturer	**angel**			**special**	**year**	
	angel			Roads & Traffic	Civil Engineering	Assistant Professor
	angel			Urban Planning	Survey Engineering	Assistant Lecturer
	angel			Astronomy and space	Astronomy and Space	Professor

					Sciences	
	angel			Layers – Microscopic fossils	Geological Sciences	Professor
	angel			Geomatics	Survey Engineering	Assistant Professor
	angel			Remote sensing and GIS	Survey Engineering	Assistant Professor
	angel			Surveying and GIS	Survey Engineering	teacher
	angel			Space and remote	Survey Engin	teacher

				sensing	eering	
	angel			Photogrammetry	Survey Engineering	teacher
	angel			Networks	Software Engineering	teacher
	angel			Hydrogeologist	Geological Sciences	Assistant Lecturer
	angel			Photogrammetry	Survey Engineering	Assistant Lecturer
	angel			Survey and GIS	Survey Engin	Assistant Lecturer

					eering	
	angel			Area	Survey Engineering	Assistant Lecturer
	angel			Geomatics	Survey Engineering	Assistant Lecturer
	angel			Construction	Civil Engineering	Assistant Lecturer
	angel			forests	Agricultural Engineering	Assistant Lecturer

Professional Development

Mentoring new faculty members

1. **Introducing the university culture**: Provide them with information about the values and goals of the university, and how to communicate with the various departments.
2. **Academic Program Delivery**: Introducing them to the contents of the study programs, student requirements, and learning objectives for each subject.
3. **Teaching Strategies**: Providing workshops on effective teaching strategies, including the use of technology in education.
4. **Assessment and feedback**: Clarify how students are evaluated and provide constructive feedback to improve academic performance.
5. **Academic Advising**: Introduce them to how to provide academic support to students, including academic advising and career guidance.
6. **Scientific research**: Encourage them to engage in research activities and provide them with information on how to write research proposals and publish research.
7. **Engage with colleagues**: Promote the importance of building a network of relationships with colleagues by participating in academic meetings and social activities.
8. **Professional Development**: Providing information on career development opportunities, including workshops and training courses.
9. **Administrative support**: Show them how to access administrative resources and available support, such as help with logistics and finance.
10. **Work-life balance**: The importance of maintaining a healthy work-life balance.

Mentoring new faculty members in this way can contribute to enhancing their academic experience and ensure a productive learning environment.

Faculty Professional Development

- **Workshops and Training Courses**: Organizing workshops and training courses on modern teaching methods, the use of technology in education, and performance appraisal.
- **Mentoring**: Providing mentoring programs for new faculty members by experienced colleagues to help them adapt to the university environment.

- **Research Development**: Encouraging participation in research conferences and workshops related to their academic fields, as well as supporting them in writing research proposals.
- **Academic Collaboration**: Promoting collaboration among faculty members through joint research projects or curriculum development teams.
- **Self-Evaluation**: Encourage faculty members to periodically self-evaluate their performance and provide feedback from their peers and students.
- **Continuous Learning**: Supporting continuing education by giving them opportunities to study or attend training programs in new fields.
- **Participation in** committees: Involve faculty members in curriculum development or education improvement committees to ensure their effective contribution to the academic process.
- **Leadership Development**: Providing leadership and management development programs, enabling them to take on leadership roles in the future.
- **Providing incentives**: Providing incentives to faculty members who participate in development activities or achieve outstanding academic achievements.
- **Communication and Sharing**: Creating communication platforms to share knowledge and experiences among faculty members, such as forums or academic bulletins.

12. Admission Criteria

Admission Criteria in Northern Technical University, College of Engineering, Kirkuk, Department of Surveying Technologies Engineering based on the central admission and laws set by the Iraqi Ministry of Higher Education and Scientific Research

13. Key sources of information about the program

Methodological books, auxiliary lieutenants, external sources (Internet), scientific research, and the latest developments.

14. Program Development Plan

1. **Assess the current situation**

- **Curriculum Analysis**: Review existing approaches to identify strengths and weaknesses.
- **Stakeholder Survey**: Gather the opinions of students, faculty, and alumni about the program.

2. Set goals

- **Improving academic quality**: Raising the standard of education through curriculum modernization.
- **Meeting Market Needs**: Ensuring that the program is compatible with the requirements of the labor market.

3. Curriculum Update

- **Incorporating new technologies**: Introducing topics around GIS, scanners, and artificial intelligence.
- **Balance between theory and practice**: Enhance the practical aspect through more practical projects and field exercises.

4. Infrastructure Enhancement

- **Provision of modern equipment**: Modernization of tools and techniques used in education and training.
- **Providing specialized laboratories**: Establishing specialized laboratories in surveying and mapping.

5. Developing the skills of faculty members

- **Continuing Training**: Organizing workshops and training sessions for faculty members to enhance their teaching and research skills.
- **Encouraging scientific research**: Supporting faculty members in conducting research and participating in conferences.

6. Periodically evaluate the program

- **Periodic Curriculum Review**: Updating the curriculum based on the results of assessments and new trends in the industry.
- **Continuous feedback**: Use student and alumni feedback to improve the program.

7. Providing academic support

- **Preparation of Academic Advising Programs**: Providing academic guidance to students to help them achieve their academic and professional goals.

Program Skills Outline															
Learning Outcomes Required from the Program															
Values				**Skills**				**Knowledge**				**Basic or Optional**	**Course Name**	**Course Code**	**Year/Level**
C4	**C3**	**C2**	**A1**	**B4**	**B3**	**B2**	**B1**	**A4**	**A3**	**A2**	**A1**				
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Human rights	NTU100	2024-2025
*	*	*	*	*	*	*	*	*	*	*	*	Essential	English I	NTU101	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Computer Principles	NTU102	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Math I	TECK101	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Drawing	TECK103	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Mechanics	TECK105	

*	*	*	*	*	*	*	*	*	*	*	*	Essential	Principles of Survey Engineering	SUE106	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Earth Science 1	SUE107	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Arabic Language	NTU104	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Democracy	NTU106	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Computer Principles	NTU103	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Sport (optional)	NTU105	
*	*	*	*	*	*	*	*	*	*	*	*	elective	French (Optional)	NTU107	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Math II	TECK102	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Laboratories (Mechanical Workshops)	TECK104	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Topographic Survey	SUE109	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Earth Science 2	SUE110	

*	*	*	*	*	*	*	*	*	*	*	*	Essential	Geometric Survey Drawing	SUE111	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Principles of Civil Engineering (Optional)	SUE112	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Programming (optional)	SUE113	
*	*	*	*	*	*	*	*	*	*	*	*				
*	*	*	*	*	*	*	*	*	*	*	*	Essential	English II	NTU200	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Ethics	NTU201	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Math 3	TECK201	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Advanced Space I	SUE201	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Imaging Scan I	SUE202	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Survey I	SUE203	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Kinetic Engineering	SUE204	

													Mechanics (Optional)		
*	*	*	*	*	*	*	*	*	*	*	*	Essential	GIS Principles (Optional)	SUE205	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Math 4	TECK202	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Summer Training 1	TECK204	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Physics	TECK203	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Advanced Space II	SUE206	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Imaging Scan II	SUE207	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Survey II	SUE208	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Cartographic	SUE209	
*	*	*	*	*	*	*	*	*	*	*	*	elective	GIS Applications (Optional)	SUE210	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Facility Scanning (Optional)	SUE211	

*	*	*	*	*	*	*	*	*	*	*	*				
*	*	*	*	*	*	*	*	*	*	*	*	Essential	English III	NTU300	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Analytics	TECK300	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Quantitative Survey 1	SUE302	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Map Projections	SUE303	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Cadastre Survey	SUE304	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Statistics	SUE312	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Near Photogrammetry Scan (Optional)	SUE306	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Monitoring of facility deformities (optional)	SUE307	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Water Bodies Survey (Optional)	SUE405	

*	*	*	*	*	*	*	*	*	*	*	*	Essential	Summer Internship 2	TECK302	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Numerical Analytics	TECK301	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Error Theory and Correction	SUE301	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Digital Imaging Scan	SUE308	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Cadastral Systems I	SUE309	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Quantitative Survey II	SUE311	
*	*	*	*	*	*	*	*	*	*	*	*	elective	GNSS (optional)	SUE314	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Technical Reporting (Optional)	SUE315	
*	*	*	*	*	*	*	*	*	*	*	*	elective	Spherical Triangles and Astronomy (Optional)	SUE407	
*	*	*	*	*	*	*	*	*	*	*	*				

*	*	*	*	*	*	*	*	*	*	*	*	Essential	English IV	NTU400	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Project Management	TECK400	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Project I	TECK401	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Cadastral Systems II	SUE401	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Remote sensing	SUE402	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Geodesy I	SUE403	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Maintenance of cadastral devices	SUE404	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Road & Traffic Engineering	SUE406	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Scientific Research Methodology	NTU410	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	Engineering Economics	TECK402	

*	*	*	*	*	*	*	*	*	*	*	*	Essential	Project II	TECK403	
*	*	*	*	*	*	*	*	*	*	*	*	Essential	City Planning	SUE408	

- **Please indicate the boxes corresponding to the individual learning outcomes from the program being evaluated**

Course Description Form

Ministry of Higher Education and Scientific Research / Northern Technical University	1. Educational Institution
Kirkuk Engineering Technical College / Department of Survey Technologies Engineering	2. University/Scientific Department
SUE101 Space Basics	3. Course Name/Code
Bachelor of Survey Technology Engineering	4. Program(s) you are involved in
1. Weekly Lesson Schedule 2. Scientific discussions, seminars, and other extra-curricular activities.	5. Available Forms of Attendance
Bologna	6. Semester/Year
120	7. Number of study hours (total)
20-10-2024	8. Description Preparation Date
9. Objectives of the Academic Program Qualifying the graduate of the Department of Survey Technology Engineering to be an applied engineer who has the ability to carry out surveying applications through	
The use of traditional and modern techniques in the design and implementation of vertical and horizontal adjustment networks of different degrees	
Preparation , compilation, design and production of maps of all kinds from ground and aerial surveys and remote sensing	
And conducting high-precision surveys of engineering projects (dams, reservoirs, bridges, tunnels, laboratories, roads and airports)	
As well as excellence and quality in performance and achieving leadership in the graduates of the department to provide the community with technical engineers in their field of specialization	

10. Required Program Outputs and Methods of Teaching, Learning and Assessment

A- Cognitive Objectives A1. Ability and knowledge to work on all aspects of surveying
B. Program Skills Objectives B1 – Surveying Projects B2 – Making Networks of Ground Control Points B3 - Making cadastral maps of all kinds
Teaching and Learning Methods
Giving theoretical and practical lectures, field training , laboratory operation, workshops and summer training during the summer vacation period.
Evaluation Methods
Daily tests, semester exams (theory + practical) Discussion of periodic reports, discussion of Al-Kharj research projects
C. Emotional and Values Goals. A1. Preparing educational cadres that can be relied on in state institutions within the specialization. C2- Developing solutions to the problems in which the institutions and specialized systems in the field of surveying are located. C3- Working to prepare the requirements of the labor market and raise the economic capacity. C4-
Teaching and Learning Methods
Development courses, periodic seminars, seminars.

Evaluation Methods
- Periodic tests. - Feedback methods.

d. Transferable general and qualifying skills (other skills related to employability and personal development). D1- Communication and conversational skills such as English language and presentation skills. D2. Teamwork skills. D3. Leadership skills and responsibility. D4. Self-education skills and self-reliance.
Teaching and Learning Methods
Lectures, Laboratories & Workshops, Summer Training, Graduation Projects.
Evaluation Methods
Daily exams, semester exams, and final exams.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
auditions	Theoretical + Practical	Space Basics	Introduction	2N+6p	1
auditions	Theoretical + Practical	Space Basics	Scale	2N+6p	2
auditions	Theoretical + Practical	Space Basics	Types of Scales	2N+6p	3
auditions	Theoretical + Practical	Space Basics	Examples of Types of Metrics	2N+6p	4
auditions	Theoretical + Practical	Space Basics	Measurements in Area	2N+6p	5
auditions	Theoretical + Practical	Space Basics	Corner	2N+6p	6
auditions	Theoretical + Practical	Space Basics	Solving Examples on a Corner	2N+6p	7
auditions	Theoretical + Practical	Space Basics	Obstacles	2N+6p	8
auditions	Theoretical + Practical	Space Basics	Types of obstacles	2N+6p	9
auditions	Theoretical + Practical	Space Basics	Tape corrections	2N+6p	10
auditions	Theoretical + Practical	Space Basics	Solving tape corrections questions	2N+6p	11
auditions	Theoretical + Practical	Space Basics	Settlement	2N+6p	12
auditions	Theoretical + Practical	Space Basics	Types of Settlement	2N+6p	13
auditions	Theoretical + Practical	Space Basics	Solving Settlement Examples	2N+6p	14
auditions	Theoretical + Practical	Space Basics	Mutual Settlement	2N+6p	15

10. Infrastructure	
Methodology Books	1 Required Textbooks
- Methodological Books. - Helpful Resources (Secondary Books) Internet, self-education websites, websites of prestigious international universities, and websites of Iraqi universities	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in References, Websites

11. Course Development Plan
- Courses within the college. - Courses within higher education and scientific research institutions. - Individual or joint scientific research (applied or theoretical) - Scientific seminars and seminars.

Course Description Form

Course Description

Northern Technical University	1. Educational Institution
Kirkuk Engineering Technical College	2. Scientific Department/Center
Keynote ScanSUE304	3. Course Name/Code
Weekly	4. Available Forms of Attendance
Decisions	5. Semester/Year
30 weeks (1 theoretical hour/week) and (2 practical hours/week), with a total of (120 hours/year).	6. Number of Hours (Total)
	7. Date this description was prepared
8. Course Objectives	
Introduce the student to the latest technological developments in surveying in general, and in the science of cadastral map production in particular , the division of the radi and the stabilization of boundaries.	

12. Course Outcomes, Teaching, Learning and Assessment Methods
A. Cognitive Objectives A1 Understanding the Kaseraan maps and their types A2- A3-
B. Skill objectives of the course. B1 – Cadasary mapping using modern software B2 –
Teaching and Learning Methods
The usual theoretical method is to use a writing board and based on the (how and why) style of the subject and according to the teaching curriculum of the subject. The theoretical presentation method using a (data show) device and relying on the (how and why) method of the subject and according to the teaching curriculum of the subject
Evaluation Methods
Direct questions in the way of (how and why) of the topic during the theoretical and practical lecture **Surprise exams during the theoretical and practical lecture** **Theoretical Semester Exams** **Final exams for the theoretical aspect**
C. Emotional and Values Goals A1**- Valuing the importance of the cadasra survey** C2-
Teaching and Learning Methods
The usual theoretical method is to use a writing board and based on the (how and why) style of the subject and according to the teaching curriculum of the subject.
Evaluation Methods

With direct questions about how the condition occurred and its causes
d. Transferred general and qualifying skills (other skills related to employability and personal development). D1. Learn how to divide and separate land D2- D3- D4-

13. Course Structure					
Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Definition of Kadsaray Survey		1
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Design and Development Cadasary maps using roads and Modern artistic styles.		2
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Calculating the spaces and Volumes Using knock Athletic and Calculations		3
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Learning and identifying the types of closed, open, and composite polygons		4
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Identify the types of trends and methods of calculating them mathematically and formally		5
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Learn how to calculate intersections (I, II, and III)		6
Surprise and	Theoretical and practical presentation	Kadsaray Survey	Learn how to calculate the point of the device (resection)		7

Semester Exams					
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	establishment Boundaries of any plot of land Of the ground separated of them, and the account Area of each part Separately by Sports Accounts		8
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	immobilization Limits of any Separate plot of them, and the account Area of each part Separately using Modern Survey Programs like GIS AutoCAD		9
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Identify and understand obstacles and Problem statement and Constraints Understanding the problem Definition and Certain Requirements The problem is Suitable for solving.		10
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Learn the basics To analyze the problem and the use of science		11

Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Visualization and Part Design Engineering		12
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Basic Science Concepts Basic Mathematics In Making Growing Maps		13
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Dividing a piece of land into two equal parts from a known point		14
Surprise and Semester Exams	Theoretical and practical presentation	Kadsaray Survey	Dividing a plot of land into two equal parts by a line of a known direction		15

14. Infrastructure	
Course Books	1 Required Textbooks
Reference Books	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

15. Course Development Plan
Field Studies

Course Description

Northern Technical University	1. Educational Institution
Engineering Technical College – Kirkuk	2. University/Scientific Department
Geologie- SUE102	3. Course Name/Code
	4. The Program(s) You Engage in
Weekly	5. Attendance formats available
	6. Semester /Year
9 weeks (2 theoretical hours per week over 15 weeks) 30 hours.	7. Number of study hours (total)
	8. Date of Preparation of this description
9. Course Objectives	
- Understanding the Scientific Foundations: Enhancing students' understanding of basic principles in geology, including the composition of the earth, rocks, and minerals. - - Geological Phenomena Analysis: To enable students to analyze and interpret various geological phenomena such as earthquakes, volcanoes, and rock formations. - - Geological Time Recognition: Teach students about geological time and how to determine geological ages of strata and rocks. - - Apply Knowledge to Reality: Develop students' ability to apply geological concepts in areas such as natural resource exploration, land planning, and environmental protection. - - Research Skills Development: Enhancing scientific research skills through conducting field and laboratory experiments. - - Science Communication: Improve students' ability to communicate effectively on geological topics, whether in writing or presentations. - - Critical Thinking: Promote critical thinking through the analysis of geological data and information. - - Interacting with environmental challenges: Understanding how human activities affect the natural environment and associated geological challenges. - - Promoting Environmental Values: Instilling the values of environmental awareness among students and the importance of preserving natural resources. - - Professional development: equipping students with the knowledge and skills needed to succeed in fields of work related to geology, such as geoengineering, environment, or scientific research	
10. Course Outcomes, Teaching, Learning and Assessment Methods	

A. Cognitive Objectives

1- Geology Calculator Concept

2- The student should understand the components of earth science and its layers

3- The student should be proficient in the importance of earth science in real life and its relationship with their main specialization, which is the engineering of surveying technologies.

B. Skill Objectives of the Course

Understanding **the composition of the Earth**: The study of the composition of the Earth and its layers, including rocks and minerals and how they are formed.

Geological **Process Analysis**: The study of various geological processes such as volcanoes, earthquakes, and erosion and how they affect the environment.

 Study of geological time: Understanding geological time and how to determine the ages of rocks and strata, which helps in understanding the history of the Earth.

• **Natural resource exploration**: The study of natural resources such as oil, gas, and minerals and how to explore and manage them sustainably.

Geological **Hazard Assessment**: Analyzing natural hazards such as earthquakes, floods, and volcanoes, and developing strategies to reduce their impact.

Understanding **Climate Change**: Studying the relationship between geological processes and climate change and its impact on the environment.

Interaction **with the environment**: Understanding how human activities affect the Earth, such as pollution and changes in use, and how to protect the environment.

 Developing research skills: Enhancing students' research and analysis skills through field studies and experiments.

Providing **sustainable solutions**: Providing sustainable recommendations for managing natural resources and dealing with environmental challenges.

Teaching and Learning Methods

Lectures and seminars. Weekly reports according to the materials given in the lecture

Evaluation Methods

Written and practical exams, semester exams, final exams

C. Emotional and Values Goals

The emotional and value goals of geoscience (geology) focus on shaping values and feelings towards the environment and nature, and promoting awareness of the importance of this science in our lives. Here are the most prominent of these goals:

1. **Developing environmental awareness**: Enhancing students' understanding of the importance of the environment and its vital role in daily life, encouraging them to take steps to preserve it. 2. **Promoting social responsibility**: Instilling the value of responsibility towards natural resources, which promotes sustainability behaviors and environmental awareness. 3. **Biodiversity Assessment**: Understanding the relationship between geology and different ecosystems, which promotes respect and appreciation for biodiversity. 4. **Developing a sense of caring**: Encouraging students to develop a sense of caring for the planet, including protecting natural resources and preserving the environment. 5. **Promoting professional ethics**: Instilling the values of integrity and honesty in scientific research and environmental practices. 6. **Climate Change Awareness**: Understand the negative impacts of climate change on the Earth and natural resources, and promote the values associated with responding to those challenges. 7. **Encourage Collaboration**: Promote the value of collaboration and teamwork in addressing environmental issues and participation in sustainable projects. 8. **Respect for local cultures**: Understanding how geology affects local communities and cultures, and promoting respect for the arts and cultural practices associated with the land. 9. **Promoting innovation and creativity**: Encouraging creative thinking and innovation in finding solutions to sustainable environmental challenges. 10. **Teaching human values**: promoting the values of compassion and respect for all forms of life, and recognizing that the planet is our common home.
Teaching and Learning Methods
Lecture
Evaluation Methods
Written and practical exams, semester exams, final exams
Evaluation Methods
d. Transferred general and qualifying skills (other skills related to employability and personal development). - Work to understand and apply the basics of geology

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise Questions	Theoretical	geologist	Definition of geology, branches of geology, relation of geology to other sciences and their applications f the earth	2	1
Surprise Questions	Theoretical	geologist	The relation between thegeology with surveying and its applications, the origin of land and how it was established	2	2
Surprise Questions	Theoretical	geologist	Structure of the Earth's layers and their components, Earth's crust and Earth's meal, Earth's core and its components, Layers of the Earth's mantle.	2	3
Surprise Questions	Theoretical	geologist	Crystals Definition of crystals, crystal faces, crystal forms, crystal varieties and crystal naming	2	4
Surprise Questions and Duties	Theoretical	geologist	Minerals, definition of minerals, formation of minerals. The physical properties of minerals	2	5
Surprise Questions	Theoretical	geologist	Rocks, definition of rocks, how rocks are formed in nature and types of rocks	2	6
Surprise Questions	Theoretical	geologist	Igneous rocks, their definition, types of igneous rocks, characteristics of igneous rocks, crystallization system of minerals from volcanic magma, classification of types of igneous rocks.	2	7
Surprise Quiz Questions	Theoretical	geologist	Sedimentary rocks, definition of sedimentary rocks, classification of sedimentary rocks, minerals of clastic and non-claustic sedimentary rocks, types of clastic and non-clastic rocks	2	8
Surprise QuestionsExams	Theoretical	geologist	Metamorphic rocks definition, characteristics of metamorphic rocks. Types of metamorphism, classification of metamorphic rocks	2	9
Surprise QuestionsExams	Theoretical	geologist	The cycle of rocks in nature, environments and conditions forming different rocks	2	10

Surprise QuestionsExams	Theoretical	geologist	Mechanical properties of rocks, types of rock strengths, compressive strength and its calculation, tensile strength and methods of calculation	2	11
Surprise QuestionsExams	Theoretical	geologist	Shear resistance of rocks and methods of calculation. Types of rock behavior, definition of stress and strain, relationship between stress and deformation	2	12
Surprise QuestionsExams	Theoretical	geologist	Ground movements, types of ground movements, earthquakes and their identification, earthquake belts in the world, causes of earthquake formation, methods of measuring earthquakes, geological effects of the emergence of earthquakes	2	13
Surprise QuestionsExams	Theoretical	geologist	Volcanoes, definition of volcanoes, how volcanoes are formed and their types, patterns of volcanoes, materials ejected by volcanoes, side effects after the emergence of volcanoes	2	14
Surprise QuestionsExams	Theoretical	geologist	Volcanoes, definition of volcanoes, how volcanoes are formed and their types, patterns of volcanoes, materials ejected by volcanoes, side effects after the emergence of volcanoes	2	15

16. Infrastructure	
• Khan, Mohammad Ibrahim. Industrial engineering. New Age International, 2004. • Vaughn, Richard C. Introduction to industrial engineering. Iowa State Pr, 1985. • Zuriarrain, Amador. "Maynard, HB: Manual de Ingeniería de la Producción Industrial (Book Review)." Boletín de Estudios Económicos 17 (1962): 646. Joseph C. Hartman, "Engineering Economy and the Decision Making Process" Prentice Hall, 2007	1 Required Textbooks
https://www.uoanbar.edu.iq/eStoreImages/Bank/6298.pdf	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in Electronic References, Websites ....

17. Course Development Plan
Enhance Evaluation • **Continuous Evaluation**: Adopting a periodic evaluation system to improve academic performance.

Course Description

Northern Technical University	2. Educational Institution
Kirkuk Engineering Technical College - Department of Survey Technologies Engineering	2. University/Scientific Department
Fundamentals of Computer Drawing	3. Course Name/Code
Phase II	4. The Program(s) You Engage in
Quarterly	5. Attendance formats available
Chapter 1 /2024	6. Semester /Year
45	7. Number of study hours (total)

20/10/2024	8. Date of Preparation of this description
9. Course Objectives	
By achieving these goals, engineering drawing modules provide students with a set of essential skills needed for effective communication, design, and manufacturing in the field of engineering.	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
1. Understanding Technical Drawings: The goal is to introduce students to the principles, norms, and symbols used in engineering drawings. This includes understanding different perspectives (such as spelling projections), dimensions, scales, and annotations that are common in geometric drawings. 2. Developing visualization skills: Engineering drawing aims to enhance students' ability to visualize objects and their components based on two-dimensional representations. This involves interpreting drawings and mentally transforming them into three-dimensional objects, enabling students to understand the spatial relationships between different parts. 3. Communicating Design Intent: The goal is to teach students how to effectively communicate design ideas and specifications through engineering drawings. Students learn how to create clear and accurate drawings that convey critical information to manufacturers, manufacturers, and other stakeholders involved in the production or construction process.	
A- Skill Objectives of the Course	
Teaching and Learning Methods	
Evaluation Methods	
C. Emotional and Values Goals It helps the student who is determined to: - Developing his conceptual skills for the engineering space. - Accurately describe the geometric space through 2D drawings or 3D modeling. - Preparation of drawings and construction plans. - Drawing projections for different geometric shapes.	
Teaching and Learning Methods	
Exams, homework and classroom skills	
Evaluation Methods	
Exams, homework and classroom skills	
Evaluation Methods	

d. Transferred general and qualifying skills (other skills related to employability and personal development). Creativity **and imagination**: The ability to think outside the box and come up with new ideas. □ **Critical thinking**: Analyzing designs and understanding what makes them effective or ineffective. Communication: The ability to express ideas clearly, whether orally or in writing. □ **Time management**: the ability to organize work and ensure on-time delivery.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Familiarize yourself with the AutoCAD interface	Understand the user interface and basic AutoCAD tools. Ability to open and save files.	3	1
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Familiarize yourself with the AutoCAD interface	Understand the user interface and basic AutoCAD tools. Ability to open and save files.	3	2
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Basic Drawing Tools	Use drawing tools such as lines, shapes, and circles. EXECUTE COMMANDS SUCH AS LINE, CIRCLE, AND RECTANGLE.	3	3
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Basic Drawing Tools	Use drawing tools such as lines, shapes, and circles. EXECUTE COMMANDS SUCH AS LINE, CIRCLE, AND RECTANGLE.	3	4
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Modify shapes	□ Use modification tools such as TRIM, EXTEND, and MOVE. □ Execute commands to reshape the drawings.	3	5
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Modify shapes	□ Use modification tools such as TRIM, EXTEND, and MOVE. □ Execute commands to reshape the drawings.	3	6
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	**Classes and Properties**	Create and manage layers. Adjust characteristics such as color and thickness	3	7
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	**Classes and Properties**	Create and manage layers. Adjust characteristics such as color and thickness	3	8

Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Dimensions & Measurements	Add dimensions to graphics. UNDERSTAND HOW TO USE DIMENSIONAL TOOLS SUCH AS DIMLINEAR AND DIMANGULAR.	3	9
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Dimensions & Measurements	Add dimensions to graphics. UNDERSTAND HOW TO USE DIMENSIONAL TOOLS SUCH AS DIMLINEAR AND DIMANGULAR.	3	10
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	3D Drawing	Introducing the basics of 3D drawing. Understand how to convert 2D graphics to 3D.	3	11
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Print & Output	Prepare drawings for printing.	3	12
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Applied Project	Create a comprehensive project that combines the skills acquired. Apply the concepts practically to a design project.	3	13
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Applied Project	Create a comprehensive project that combines the skills acquired. Apply the concepts practically to a design project.	3	14
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Review and Evaluation		3	15

18. Infrastructure	
"Mastering AutoCAD 2021 and AutoCAD LT 2021" by Brian C. Benton	1 Required Textbooks
Autodesk offers a range of free tutorials and educational content for AutoCAD users.	2 Main References (Sources)
	Recommended books and references (scientific journals, reports,....)
	in Electronic References, Websites ....

19. Course Development Plan
A 15-week AutoCAD drawing course development plan, focusing on basic tools, editing orders, layers, dimensions, and design of individual projects, with periodic reviews and evaluations. alif

Course Description Form

Course Description

In this course, spatial methods are taught, which include measuring angles and their types, the systems adopted in measuring them, measuring directions, the types of references used, the difference between circular and quadrilateral directions, and coordinate systems based on distance and direction, and then measuring horizontal distances using tachometric area (Stadia and shadow methods) and measuring horizontal distances using modern electronic devices such as dystomats and comprehensive stations.

Northern Technical University	9. Educational Institution
Engineering Technical College / Kirkuk	10. Scientific Department/Center
Cadastral Methods	11. Course Name/Code
Weekly	12. Available Forms of Attendance
Quarterly	13. Semester/Year
15 weeks (3 theoretical hours/week) and (3 practical hours/week), with a total of (90 hours/semester).	14. Number of Hours (Total)
20/10/2024	15. Date this description was prepared
16. Course Objectives:	

The student learns the basic concepts of space, working on different devices, how to use them in their different ways, and methods of calculating angles, directions, and horizontal distances.

10. Course Outcomes, Teaching, Learning and Assessment Methods

This course results in a student who is familiar with the principles of land area and is able to use the Theodolite and Total Station devices to measure angles, directions, and horizontal distances.

A. Cognitive Objectives
A1. Principles of Land Survey
A2. Principles of Measuring Angles and Directions
A3. Principles of measuring horizontal distances.

B . Skill objectives of the course.
B1 – Preparation of reports for various field experiments
B2 – Use of different scanners

Teaching and Learning Methods

Face-to-face lectures, e-learning, blended learning.

Evaluation Methods

Daily exams, reciprocal question and discussion tests, as well as written tests, monthly exams, final exams .

C. Emotional and Values Goals C1- Dealing with the basic principles of the advanced space and striving to apply them A2- Spreading the spirit of cooperation and joint work in field applications
d. Transferable general and qualifying skills (other skills related to employability and personal development). D1. Extensive discussions on concepts D2. Courses and student seminars on modern applications of space D3. Field visits to vital and construction facilities D4. Coordinating with the various state departments to exchange skills.

20. 6

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Introduction to Angle Measurement, Units Used in Angle Measurement, Sixty-Six, Centennial System	6	1
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Directions: Magnetic North, True North, Virtual North, Quarter Directions and Circular Directions,	6	2
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Conversion methods between quadrant and circular directions, forward and backward directions.	6	3
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Types of angles: horizontal and vertical angles, inner and outer corners, deflection angles	6	4
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Theodolite device: its types, parts, method of adjusting the device, methods of measuring angles	6	5
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Coordinate systems: polar coordinates, Cartesian coordinates, spherical coordinates.	6	6
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Tacometric Survey: Definition, Purposes, and Principles.	6	7
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Tachometric scanning: Measuring horizontal distances by the Stadia method.	6	8
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Tachometric scanning: Measuring horizontal distances by shadow method.	6	9

Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Trigonometric Leveling: Types and Applications	6	10
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Principles of Electronic Distance Measurement	6	11
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Applications in Measuring Distance Electronically	6	12
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Error Correction in Electronic Measurement	6	13
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Inclined and horizontal distances	6	14
Surprise and Semester Exams	Theoretical and practical presentation	Cadastral Methods	Spherical Distances and Horizontal Distances	6	15

21. Infrastructure	
Course Books	1 Required Textbooks
A Text Book of Surveying & Leveling, R. Agor , Khanna Publishers, 2011 Surveying Vol. 1, B.C Punmia , Laxmi Publications, 1995	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

22. Course Development Plan
Using modern devices in line with the labor market and developing and intensifying practical experiences

Course Description Form

Course Description

In this course, the principles of horizontal control networks, which include the principles of ribbing, calculating coordinates in closed circular polygons, closed bonded polygons with front and back calculations, methods of correcting coordinates, calculating the closing error, and the relative accuracy of each polygon, and then identifying the principles of triangulation, its types, applications, and degrees, how to calculate the strength of shapes, the derivation of geometric conditions in triangulation, how to calculate coordinates in triangulation, and how to calculate coordinates in triangulation and the distribution of errors.

Northern Technical University	17. Educational Institution
Engineering Technical College / Kirkuk	18. Scientific Department/Center
Ground Networks Survey	19. Course Name/Code
Weekly	20. Available Forms of Attendance

Quarterly	21. Semester/Year
15 weeks (3 theoretical hours/week) and (3 practical hours/week), with a total of (90 hours/semester).	22. Number of Hours (Total)
	23. Date this description was prepared
24. Course Objectives:	
The student will learn about the basic concepts of advanced space, working on different devices, how to use them in their different ways, and methods of calculating coordinates through the laws of ribbing and triangulation.	

10. Course Outcomes, Teaching, Learning and Assessment Methods

This course results in a student who is familiar with the principles of land area and is able to use the Theodolite and Total Station devices to calculate coordinates through the laws of ribbing and triangulation.

A. Cognitive Objectives

A1. Principles of Land Survey

A2. Principles of ribbing

A3. Principles of Triangulation.

B . Skill objectives of the course.

B1 – Preparation of reports for various field experiments

B2 – Use of different scanners

Teaching and Learning Methods

Face-to-face lectures, e-learning, blended learning.
Evaluation Methods
Daily exams, cross-question and discussion tests, as well as written tests, monthly exams, and final exams.
C. Emotional and Values Goals C1- Dealing with the basic principles of the advanced space and striving to apply them A2- Spreading the spirit of cooperation and joint work in field applications
d. Transferable general and qualifying skills (other skills related to employability and personal development). D1. Extensive discussions on concepts D2. Courses and student seminars on modern applications of space D3. Field visits to vital and construction facilities D4. Coordinating with the various state departments to exchange skills.

23. 6

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Introduction to Horizontal Control Networks	6	1
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Ribbing: Definition, Types and Applications	6	2
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Ribbed calculations and coordinate calculations	6	3
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Forward and reverse accounts	6	4
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Closed Circular Polygon	6	5
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Polygon Closed Link	6	6
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Methods of correcting coordinates	6	7
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Triangulation: Definition, Types and Applications	6	8
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Properties of Triangulation Networks	6	9

Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Forms of Triangulation Networks	6	10
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Calculating the power of form in triangulation	6	11
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Derivation of geometric conditions in triangulation	6	12
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Triangulation calculations and error distribution	6	13
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Dimensional Triangulation: Its Definition and Types	6	14
Surprise and Semester Exams	Theoretical and practical presentation	Ground Networks Survey	Calculating coordinates in dimensional triangulation	6	15

24. Infrastructure	
Course Books	1 Required Textbooks
Engineering Surveying, W. Schofield & M. Breach, Butterworth-Heinemann 2007. Surveying, A. Bannister, S. Raymond, R. Baker, Longman Scientific & Technical 1993.	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

25. Course Development Plan
Using modern devices in line with the labor market and developing and intensifying practical experiences

Course Description Form

Course Description Geodetic Survey

The student studies the meaning of geodesy, which is the science that is specialized in determining the shape and size of the earth, calculating the coordinates of points, lengths and directions of the lines that lie on its surface, and also studies a brief about the axes used in locating and converting between them. The course includes determining the gravity of the Earth and its directions, as well as an overview of satellite geodesy, which has made a breakthrough in the field of geodetic space.

Northern Technical University/Technical College - Kirkuk	25. Educational Institution
Department of Survey Engineering Technologies	26. University Department/Center
Geodesic Survey 407	27. Course Name/Code
Official working hours	28. Available Forms of Attendance
Fourth Year	29. Semester/Year
120 hours	30. Number of Hours (Total)
8/9/2016 and updated at the beginning of each academic year	31. Date this description was prepared

8. Course Objectives:
A- Introduction to Geodesic Surveying. B- Introducing the alpsoid and its elements, identifying a point on its surface, geographical and Cartesian coordinates, how to transform between them, and the radius of curvature. C- Derivation of differential elements used in the development and solution of complex problems in geodetic space. D- Calculate the shortest curved distance on the Earth's surface . E- Solve the direct and inverse problem, which are widely used in geodetic space to calculate distances and positions on the Earth's surface. F- Enable the student to use triangular grids of all kinds, the locations of ground control points, and the geodetic budget G- Study of Gravity and Geoid and its Relationship with Alpsoid during Cadastral Calculations. H- Learn about satellite geodesy technologies.

9. Learning Outcomes, Teaching Methods, Learning and Assessment
A. Knowledge and Understanding 1. Introduction to the applications of geodetic surveying. 2. Introduction to the elements and properties of albasoid. 3. Conversion between geographical and Cartesian coordinates. 4. Differential element derivation in geodetic space and equation of the curve on the surface of the basoid. 5. Solving the equation of the direct and inverse problem. 6. Make the necessary corrections in practical measurements on the surface of the earth. 7. Definition of geodesic triangles and how to determine ground adjustment points. 8. Determination of the Earth's gravitational field and the determination of the geoid and its relationship with the bassid. 9. Study of terrestrial reference coordinates and astronomical reference coordinates. 10. Using the methods used in observation by learning satellite geodesy techniques

B. Program-specific skills

1. Acquire extensive knowledge and skill in solving the laws of al-Baswid, which enables the graduate to employ these knowledge and skills in surveying work.

2- The ability to benefit from the axis systems and the locations of ground control points for field work.

3. Ability to make the necessary correction for field measurements .

4- Developing and understanding the systems of the ground and astronomical axes in order to be used in surveying work.

5. Ability to derive equations in order to solve complex problems in geodesy.

6- Developing a complete visualization of the Earth's gravity, the distribution of the Earth's gravitational field, and drawing the geoid.

7- Using satellite geodesy technologies.

Teaching and Learning Methods
- Giving theoretical presentations on the basic principles of the subject with practical examples. - Training in the use of some important astronomical programs to identify maps and positions of stars and conduct astronomical observations. - Assigning students with practical questions as homework. - Involve students in the discussion.
Evaluation Methods
Participation in the classroom. Solve homework. Daily, quarterly and final exams .

C. Emotional and Ethical Goals.

1. Developing the student's ability to work on performing assignments and delivering them on time.
2. Analyze the problem, find appropriate solutions, and anticipate the expected results.
3. Developing the student's ability to dialogue and discuss.
4.

Teaching and Learning Methods

- Managing the lecture in an applied way related to the reality of the specialization to attract the student to the subject of the lesson without deviating from the core of the topic so that the material is flexible and understandable and analyzed.
- Assigning the student to some group activities and duties.
- Allocating a percentage of the grade for daily assignments and tests.

Evaluation Methods

- Active participation in the classroom is a guide to the student's commitment and responsibility.
- Adhere to the deadline in submitting assignments and reports.
- The semester and final exams express commitment and knowledge and skill achievement.

d. General and transferable skills (other skills related to employability and personal development).

1. Developing the student's ability to deal with the means of technology.
2. Developing the student's ability to deal with multiple means.
3. Developing the student's ability to dialogue and discuss and enabling him to pass job interviews.
4. Empowering the student to be creative and continuous self-development.

10. The most important sources of information about the program

1. Geometric reference systems in geodesy C. Jekeli Ohio state university
2. Geodesy W. Torge W. degruyter, berlin
3. Geometric geodesy lecture notes R. A. Rapp (I, II, 1992)
4. The 3-D global spatial data model E. Burkholder 2008
5. Physical geodesy Neco sneeuw institute of geodesy Stuttgart university
6. Satellite geodesy Seber
7. Geodetic Engineering by Nafie Al-Shafei
8. Geodetic Surveying Saudi Technical Education and Systematic Training

11. Curriculum Structure

week		Subject	Central ideas	Objective	Learning method	Evaluation Method
1		Overview of geodesy	Introduction fields of geodesy, historical perspective	What is geodesy, who needs it and why	- Giving theoretical presentations on the basic principles of the subject with practical examples. - Training in the use of some important astronomical programs to identify maps and positions of stars and conduct astronomical observations. - Assigning students with practical questions	Participation in the classroom. Solve homework. Daily, quarterly and final exams

					as homework. - Involve students in the discussion.	
2,3		Geometrical geodesy	Earths shape, ellipsoidal coordinates	Dealing with the Earths size and shape, study of geometry of the ellipsoid		
4			Meridian plane for a point, geocentric latitude reduced latitude, geodetic latitude, relationship between these various latitudes	To define practical coordinates of points in relation to the ellipsoid, also to find the relationship between different latitudes. Derive the Cartesian coordinates in terms of the latitudes for arbitrary point.		
5,6		Elementary differential geodesy	Radii of curvature normal section, prime vertical, minimum and maximum radii of curvature mean radius of curvature, Gaussian mean radius	Derive differential elements are used in developing the geometry of geodesics on the ellipsoid and solving the problems in geometric geodesy, determine the curvature of an arbitrary		

				normal section, using radius of curvature of the normal section in azimuth to define the mean local radius of the ellipsoid		
7,8		Coordinate system	Geodetic coordinate, Cartesian coordinates, once through "Vincenty method"	Transformation between coordinates		
9		Arc length on the ellipsoid surface	Geodesics, length of arc on the ellipsoid, latitude arc length, meridian arc length	To determine the curve on the ellipsoid connecting two points having the shortest length.		
10		Clairauts constant	Clairauts constant, convergence of the meridians			
11		Ellipsoid and spherical excess	Spherical excess, ellipsoid excess			
12, 13		Coordinates computation	Direct/inverse problem, puissant method, Gauss method	Using two essential problem in the computation of coordinates, directions and distance on the particular given ellipsoid		
14, 15		Local terrestrial coordinators	Local geodetic coordinate system, three dimensional coordinate computation	This set of coordinates forms the basis for traditional three dimensional geodesy and for close range local		

				surveys, in this system make traditional geodetic measurements of distance and angles, or direction using measuring devices. Terrestrial coordinate systems are widely used to define the position of points on the terrain		
16, 17		Astronomic coordinate	Astronomic latitude, astronomic longitude	The direction of gravity at any point is determined naturally by the arbitrary terrestrial mass distribution and the plumb line is defined by this direction. Making angular measurements leads to the determination of azimuth and a type of latitude and longitude.		
18		Reduction of field observation to the geodetic values	Reduction of field observation to the geodetic values	In geodetic works(horizontal surveys referenced to an ellipsoid and vertical		

				surveys to the geoid) correction must be made to field observations to obtain their equivalent geodetic values. For reducing long slope distances to their ellipsoid length, in this method based on elevation differences between the end points of the sloping line		
19		Reduction of distance observation using vertical angles	Reduction of distance observation using vertical angles	The effect of refraction eliminated by averaging reciprocal vertical angles.		
20		Reduction of directions and angles	Reduction of directions and angles	Because of the sphericity of the earth, the normal at observing and target stations are skewed with respect to reach other, and hence two additional corrections may be necessary for deviation of vertical.		
21, 22		Terrestrial reference system	Geodetic datum, horizontal datum,	The WGS system is		

			north America datum, NAD27, NAD83, world geodetic system	not based on a single point, but many points, fixed with extreme precision by satellite fixes and statistical methods. The WGS system is applicable worldwide. All regional datums can be referenced to WGS once a survey tie has been made.		
23		Vertical datum	International terrestrial frame ITRF, high accuracy reference network HARN, vertical datums NGVD29, north american vertical datum			
24, 25		Physical geodesy	Geoid , Geoid Separation (N), Orthometric Height (H),	The physical earth's gravity force can be modeled to create a positioning reference frame that rotates with the earth. The geoid is such a surface (an equipotentia l surface of the earth's gravity field) that best approximate s Mean Sea		

				Level (MSL) The orientation of this surface at a given point on geoid is defined by the plumb line. A mean gravity field can be used as a reference surface to represent the actual earth's gravity field.		
26		Gravitation	Vertical of attraction of point mass, gravitational potential, ideal soild	Determining of geometrical and physical shape of the earth and its orientation in space, the grvitational effect of some ideal bodeys		
27		Gravity and gravimetry	Gravimitry, gravity network	Centrifugal acceleration		
28		The normal field	The parametars of normal gravitational potental			
29		Satellite geodesy	Active satellite, The Changing World of Geodesy and Surveying	In geodetic applications, satellites can be used both in positioning and in gravitational field studies. Geodesists have used many different satellites in the past 40 years, ranging from		

				completely passive to highly sophisticated active (transmitting) satellites, from quite small to very large. Passive satellites do not have any sensors on board and their role is basically that of an orbiting target. One of the advantages of applying space methods to geodesy is the establishment of a highly accurate reference frame for positioning. The centre of mass of the Earth.		
30		=	Determination of directions, determination of ranges, determination of range difference, satellite altimetry, determnination of ranges and range rates, interferometric measurments	The observation techniques used in satellite geodesy.		

12. Infrastructure	
1.Geometric reference systems in geodesy C. Jekeli Ohio state university 2.Geodesy W. Torge W. degruyter, berlin 3.Geometric geodesy lecture notes R. A. Rapp (I, II, 1992) 4.The 3-D global spatial data model E. Burkholder 2008 5.Physical geodesy Neco sneeuw institute of geodesy Stuttgart university 6.Satellite geodesy Seber 9. Geodetic Geometry by Nafi Al-Shafai7. Geodesic Surveying Saudi Technical Education and Systematic Training 8.	1 Required Textbooks
1.Geometric reference systems in geodesy C. Jekeli Ohio state university 2.Geodesy W. Torge W. degruyter, berlin 3.Geometric geodesy lecture notes R. A. Rapp (I, II, 1992) 4.The 3-D global spatial data model E. Burkholder 2008 5.Physical geodesy Neco sneeuw institute of geodesy Stuttgart university 6.Satellite geodesy Seber 10. Geodetic Geometry by Nafi Al-Shafai7. Geodesic Surveying Saudi Technical Education and Systematic Training 8.	2 Main References (Sources)
1.Geometric reference systems in geodesy C. Jekeli Ohio state university 2.Geodesy W. Torge W. degruyter, berlin 3.Geometric geodesy lecture notes R. A. Rapp (I, II, 1992) 4.The 3-D global spatial data model E. Burkholder 2008 5.Physical geodesy Neco sneeuw institute of geodesy Stuttgart university 6.Satellite geodesy Seber 11. Geodetic Geometry by Nafi Al-Shafai7. Geodesic Surveying Saudi Technical Education and Systematic Training 8.	Recommended books and references (scientific journals, reports,....)
	in Electronic References, Websites ....

13. Course Development Plan
By following up on the developments in the field of geodetic surveying and following up on the curricula in international universities and introducing these developments in the curriculum structure.

Course
Description

	1. Educational Institution
Northern Technology/Survey	2. University/ Scientific Department
Equations of Differential Equations TECK201/	3. Course Name/ Code
No	4. The program (s) in which you are involved
Data Shko - PowerPoint - Whiteboard	5. Attendance formats available
First	6. Semester / Year
4 Theoretical	7. Number of study hours (total)
20-10-2024	8. Date of preparation of this description
9. Course Objectives	
a. Developing a mathematical relationship to a particular physical problem; b. Solving mathematical equations to obtain the unknown variables, c. Choosing the appropriate solution method for the given differential equations, D. Solving first, second, and higher order differential equations using different methods in mathematics	
10. Course Outcomes and Methods of Teaching, Learning and Evaluation	
A. Cognitive Objectives 1 By the end of this course, students will have acquired the basic knowledge of drawing two-dimensional curves using transformation properties. 2. Understand the concepts of boundaries and continuity. 3. The ability to apply differentiation to solve engineering problems.	
A. Skill Objectives of the Course 1. Learn how to use the power rule, quotient, quotient and series to differentiate between algebraic trigonometric functions 2. Learn about different types of matrices and their properties. 3 - Applying matrices operations to solve the system of linear equations.	
Teaching and Learning Methods	

Evaluation Methods
Giving theoretical and practical lectures and workshops.
C. Emotional and Values Goals Guidance content that includes the following: - Basic requirements for calculus, coordinates, and graphs in the plane. - Slope and equations for lines, functions, and their graphs. Shifts, circuits, and equivalents.
Teaching and Learning Methods
Giving theoretical and practical lectures and workshops.
Evaluation Methods
Classroom and online quizzes, homework, peer feedback activities, and practice quizzes.

Evaluation Methods
D. Transferable General and Qualifying Skills (Other Skills Related to Employability and Personal Development) The second year of all mathematics programs is designed to give students a comprehensive foundation in a wide range of mathematical ideas, techniques, and tools in order to prepare them for the later stages of their studies. Develop a mathematical relationship to a particular physical problem. Solve mathematical equations to obtain unknown variables. Choosing the appropriate solution method for the given differential equations. Solve first, second, and higher order differential equations using various methods in classical mathematics.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Theoretical presentation	Sudden and quarterly exams	A Review for Integration Techniques			1
Theoretical presentation	Sudden and quarterly exams	First Order Differential Equations			2
Theoretical presentation	Sudden and quarterly exams	Methods of Solving First Order D.E.s			3
Theoretical presentation	Sudden and quarterly exams	Integrating Factors			4
Theoretical presentation	Sudden and quarterly exams	Applications on First Order D.E.s			5
Theoretical presentation	Sudden and quarterly exams	Second Order Linear Differential Equations			6
Theoretical and practical presentation	Sudden and quarterly exams	Methods of Solving Second Order D.E.s			7
Theoretical and practical presentation	Sudden and quarterly exams	Applications on Second Order D.E.s			8
Theoretical and practical presentation	Sudden and quarterly exams	Higher Order Linear D.E.s			9
Theoretical and practical presentation	Sudden and quarterly exams	Fourier series for Periodic Functions			10
Theoretical and practical presentation	Sudden and quarterly exams	Even and Odd Functions			11

Theoretical and practical presentation	Sudden and quarterly exams	Applications on Fourier Series			12
Theoretical and practical presentation	Sudden and quarterly exams	Power Series			13
Theoretical and practical presentation	Sudden and quarterly exams	Solution of O.D.E by Power Series			14
Theoretical presentation	Sudden and quarterly exams	Applications for Power Series			15

.10 Infrastructure	
Course Books	1 Required Textbooks
"Advanced Engineering Mathematics", by Erwin Kreyszig	2 Main References (Sources)
	Recommended books and references (journals) Scientific , Reports ....,)
	in References, Websites .... Internet

.11 Course Development Plan
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Course Description

Ministry of Higher Education and Scientific Research / Northern Technical University	3. Educational Institution
Kirkuk Engineering Technical College / Department of Survey Technologies Engineering	2. University/Scientific Department
Computer Drawing Applications SUE205	3. Course Name/Code
Bachelor of Survey Engineering	4. The Program(s) You Engage in
1. Weekly Lesson Schedule 2. Scientific discussions, seminars, and other extra-curricular activities.	5. Forms of attendance available
Bologna	6. Semester /Year
45	7. Number of study hours (total)
/10/202024	8. Date of Preparation of this description
9. Course Objectives	
1- Providing students with basic concepts related to geometric drawing 2- Knowledge of Drawing Tools in AutoCAD 3- How to Map Contours and Surfaces 4- How to Draw Longitudinal and Cross-Sectional Sections 5- Calculate Cut, Fill Quantities	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
B- Cognitive Objectives 1. The concept of autoCAD painting 2. The concept of contour and surface mapping 3-Profile and cross section	
C- Skill Objectives of the Course Preparation and mapping of contours and surfaces	
Teaching and Learning Methods	
Theoretical and practical lectures and interactive lectures	
Evaluation Methods	
Written and Practical Exams – Reports – Semester and Final Exams	
C. Emotional and Values Goals	
Teaching and Learning Methods	
Theoretical and practical lectures and interactive lectures	
Evaluation Methods	
Written and Practical Exams – Reports – Semester and Final Exams	
d. Transferred general and qualifying skills (other skills related to employability and personal development). Working on understanding and applying contour maps and drawing clips	

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Exams	Theoretical and practical presentation	Computer Drawing Applications	Introduction to AutoCAD	1N+2P	1
Exams	Theoretical and practical presentation	Computer Drawing Applications	Draw	1N+2P	2
Exams	Theoretical and practical presentation	Computer Drawing Applications	modify	1N+2P	3
Exams	Theoretical and practical presentation	Computer Drawing Applications	Dimension	1N+2P	4
Exams	Theoretical and practical presentation	Computer Drawing Applications	Introduction to CIVIL 3D	1N+2P	5
Exams	Theoretical and practical presentation	Computer Drawing Applications	point	1N+2P	6
Exams	Theoretical and practical presentation	Computer Drawing Applications	Surface	1N+2P	7
Exams	Theoretical and practical presentation	Computer Drawing Applications	Contour Map	1N+2P	8
Exams	Theoretical and practical presentation	Computer Drawing Applications	Alignment	1N+2P	9
Exams	Theoretical and practical presentation	Computer Drawing Applications	Profile	1N+2P	10

Exams	Theoretical and practical presentation	Computer Drawing Applications	Existing ground profile	1N+2P	11
Exams	Theoretical and practical presentation	Computer Drawing Applications	Design line	1N+2P	12
Exams	Theoretical and practical presentation	Computer Drawing Applications	Create Assembly	1N+2P	13
Exams	Theoretical and practical presentation	Computer Drawing Applications	Cross section	1N+2P	14
Exams	Theoretical and practical presentation	Computer Drawing Applications	Calculate volume	1N+2P	15

26. Infrastructure	
Course Books	1 Required Textbooks
Reference Books	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

27. Course Development Plan

Field Studies

Course Description

Ministry of Higher Education and Scientific Research / Northern Technical University	4. Educational Institution
Kirkuk Engineering Technical College / Department of Survey Technologies Engineering	2. University/Scientific Department
Engineering StatisticsSUE312	3. Course Name/Code
Bachelor of Survey Engineering	4. The Program(s) You Engage in
1. Weekly Lesson Schedule 2. Scientific discussions, seminars, and other extra-curricular activities.	5. Attendance formats available
Decisions	6. Semester /Year
30	7. Number of study hours (total)

/10/202024	8. Date of Preparation of this description
9. Course Objectives	
6- Providing students with basic concepts related to engineering statistics 7- Identify and understand fundamental patterns in complex systems, allowing for control and optimization based on statistical analysis	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
D- Cognitive Objectives 1. Enabling students to understand the concept of engineering statistics 2. Applying statistical methods to predict possible future results	
E- Skill Objectives of the Course Enable students to understand the concept of probability, probability distributions, and statistical analysis of data. Probabilistic statistics is used in many applications such as economics, finance, natural and social sciences, mathematical statistics, and others.	
Teaching and Learning Methods	
Theoretical and interactive lectures	
Evaluation Methods	
Written Exams – Reports – Semester and Final Exams	
C. Emotional and Values Goals	
Teaching and Learning Methods	
Theoretical and interactive lectures	
Evaluation Methods	
Written Exams – Reports – Semester and Final Exams	
d. Transferred general and qualifying skills (other skills related to employability and personal development). Understand the concept of engineering statistics, probability theory and how to use it in multiple fields.	

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
auditions	theoretical	Engineering Statistics	Introduction	2N	1
auditions	theoretical	Engineering Statistics	View Statistical Data	2N	2
auditions	theoretical	Engineering Statistics	Data Description	2N	3
auditions	theoretical	Engineering Statistics	Central Trend Gauges	2N	4
auditions	theoretical	Engineering Statistics	Contrast Scales	2N	5
auditions	theoretical	Engineering Statistics	Exploratory Data Analysis	2N	6
auditions	theoretical	Engineering Statistics	Probability	2N	7
auditions	theoretical	Engineering Statistics	Discrete probability distributions	2N	8
auditions	theoretical	Engineering Statistics	Normal Distribution	2N	9
auditions	theoretical	Engineering Statistics	Applications of Natural Distribution	2N	10
auditions	theoretical	Engineering Statistics	Hypothesis testing	2N	11
auditions	theoretical	Engineering Statistics	T test for the average	2N	12
auditions	theoretical	Engineering Statistics	Regression	2N	13

auditions	theoretical	Engineering Statistics	Linear regression	2N	14
auditions	theoretical	Engineering Statistics	Nonlinear regression	2N	15

28. Infrastructure	
Probability & Statistics for Engineers & Scientists	1 Required Textbooks
Probability & Statistics for Engineers & Scientists Probability, Statistics, and Reliability for Engineers and Scientists, 3rd Edition by Bilal M. Ayyub and Richard H. McCuen	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in References, Websites

29. Course Development Plan
By following up on the developments in the field of engineering statistics and following up the curricula in international universities and introducing those developments in the curriculum structure

Course Description Form

Course Description

The student learns how to produce maps from satellite and aerial imagery as well as from land surveys using GIS..

Northern Technical University	32. Educational Institution
Northern Technical University Department of Survey Technologies Engineering	33. University / Scientific Department
Produce maps	34. Course Name/Code
GIS	35. Program(s) you are involved in
Weekly	36. Available Forms of Attendance
Second Semester / Second Year	37. Semester/Year

15 weeks (2 theoretical hours/week) and (2 practical hours/week), with a total of (60 hours/year).	38. Number of Hours (Total)
39. Course Objectives: The student learns how to produce maps using the GIS software, as well as the student learns what are the sources of map production and how to deal with them, and to create maps of the type of contour maps, topographic maps, and basic maps.	
The concept of city planning and basic designs, types and levels of planning, preparation and survey of land uses and types of	
City Planning Surveys, Urban Renewal and Environmental Planning, Road Types, Parking Lots and Intersections	
, railways and airports, the role of cadastral works in the development of the basic designs of the city	
Planning Theories, Planning Schools, Stages of the Planning Process, Emergence of Cities, Types of Cities, and the Development of the General Plan	
For the city, concepts and fundamentals of transportation and traffic engineering and upstream and destination studies	

30. Course Outputs and Methods of Teaching, Learning and Evaluation In this course, all types of maps are produced, including contour, topographical, and basic.
A. Cognitive Objectives A1. **The concept of cartography and basic designs for map-making** A2- A3-
B. Skill objectives of the course. B1 – Preparation and Survey of Land Use and Types of Surveys for the Production of Maps B2 – Use of Geographic Information Integration in Map Production
Teaching and Learning Methods
Lecture
Evaluation Methods

Written exams, semester exams, final exams.
C. Emotional and Values Goals A1- **Valuing dealing with the lathe and developing the general plan of the city** C2-
Teaching and Learning Methods
Lecture
Evaluation Methods
Written Exams, Semester Exams, Final Exams
d. Transferred general and qualifying skills (other skills related to employability and personal development). D1. Work on understanding and applying urban renewal and environmental planning D2- D3- D4-

31. Course Structure					
Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	The pattern of maps Map Style		1
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	The method of lettering Writing methods on terrain		2
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	The positioning of letters the location of writing on the terrain		3
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Counter lineContour lines		4
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Counter interval methods selection Methods of selecting the contour period		5
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Types of contour lines Types of Contour Lines		6
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Base maps Basic Maps		7
Surprise and	Theoretical and practical presentation	Produce maps	Coordinate system Coordinate System		8

Semester Exams					
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Create maps using the surveying software (GIS)Create maps using GIS		9
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Reading and interpreting maps Reading and interpreting maps		10
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Map functions Map guides		11
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Land survey Land Survey		12
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Arial photography Aerial Survey		13
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Remote sensing Remote sensing		14
Surprise and Semester Exams	Theoretical and practical presentation	Produce maps	Global Information System (GIS)Geographic Information Systems		15

32. Infrastructure	
Course Books	1 Required Textbooks
Reference Books	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

33. Course Development Plan
Field Studies

Course Description Form

Course Description

It is a science that is concerned with making maps from various sources such as ground surveys using total stations and others, or satellite survey

sources using satellites, taking satellite images and converting them into maps using special programs, or from aerial survey sources, taking aerial photos and converting them into maps.

Northern Technical University	40. Educational Institution
Northern Technical University Department of Survey Technologies Engineering	41. University / Scientific Department
Cartographic	42. Course Name/Code
GIS	43. Program(s) you are involved in
Weekly	44. Available Forms of Attendance
First Semester / Second Year	45. Semester/Year
15 weeks (2 theoretical hours/week) and (2 practical hours/week), with a total of (60 hours/year).	46. Number of Hours (Total)
	47. Date this description was prepared
48. Course Objectives: The student learns about the types of maps and learns how to make and draw a map, the student learns how to read the map and what the symbols mean, the student learns how to benefit from the map in the practical aspect and benefit from it in the fields of life.	
The concept of city planning and basic designs, types and levels of planning, preparation and survey of land uses and types of	
City Planning Surveys, Urban Renewal and Environmental Planning, Road Types, Parking Lots and Intersections	
, railways and airports, the role of cadastral works in the development of the basic designs of the city	
Planning Theories, Planning Schools, Stages of the Planning Process, Emergence of Cities, Types of Cities, and the Development of the General Plan	
For the city, concepts and fundamentals of transportation and traffic engineering and upstream and destination studies	

34. Course Outputs and Methods of Teaching, Learning and Evaluation In this course, all types of maps are produced, including contour, topographical, and basic.

A. Cognitive Objectives

A1. **The concept of cartography and basic designs for map-making**

A2-

A3-

B. Skill objectives of the course.

B1 – Preparation and Survey of Land Use and Types of Surveys for the Production of Maps

B2 –

Teaching and Learning Methods

Lecture

Evaluation Methods

Written exams, semester exams, final exams.

C. Emotional and Values Goals

A1- **Valuing dealing with the lathe and developing the general plan of the city**

C2-

Teaching and Learning Methods

Lecture

Evaluation Methods

Written Exams, Semester Exams, Final Exams

d. Transferred general and qualifying skills (other skills related to employability and personal development).

D1. Work on understanding and applying urban renewal and environmental planning

D2-

D3-

D4-

35. Course Structure					
Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	The nature of cartography, map design , techniques used, graphic arts and visual perception		1
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Types of Maps and Their Uses		2
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	The relationship between cartography and surveying and remote sensing		3
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Methods of correcting errors Measurement, their types and laws		4
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Map Production in Iraq, Coding and Signing of Location Monuments		5
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Coding – Signing Linear Milestones		6
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Coding - Signature of cadastral landmarks		7
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Standard code tables used in topographic maps		8

Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Cartographic Summary - Its Causes and Purposes		9
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Cartographic summaries		10
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Application of summarization operations in topographic and thematic maps		11
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Map Design – Introduction, Receipt Theory		12
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Map Design – Map Perception		13
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Map Design – Line		14
Surprise and Semester Exams	Theoretical and practical presentation	Cartographic	Iraqi Topographic Map Design		15

36. Infrastructure	
Course Books	1 Required Textbooks
Reference Books	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

37. Course Development Plan
Field Studies

Course Description

The course directly contributes to introducing students to the field of project management using Microsoft Project

Providing the various departments in the organization with the methods of scheduling the project, as well as linking the tasks of the

project and calculating its cost to achieve the various economic goals of the organization.

Northern Technical University	5. Educational Institution
Kirkuk Engineering Technical College - Department of Survey Technologies Engineering	2. University/Scientific Department
Engineering Project Management SUE409	3. Course Name/Code
Stage Four	4. The Program(s) You Engage in
Quarterly	5. Attendance formats available
First Semester 2024	6. Semester /Year
60	7. Number of study hours (total)
20-10-2024	8. Date of Preparation of this description
9. Course Objectives	

Qualifying graduates to work in various public and private production and service sectors. To provide students with political knowledge and skills in the field of project management. Implementing project management training programs. Enriching knowledge of the practical application of Microsoft Project.
10. Course Outcomes, Teaching, Learning and Assessment Methods
Cognitive Objectives Knowledge and understanding of the principles of project management science and knowledge objectives. Familiarity with different strategies in the field of project management. Familiarity with the nature of workers' organizations for public and private projects.
Skill Objectives of the Course Preparing and designing new projects using computers. Scheduling the output and evaluating investment projects. Practical application of modern projects in the field of labor management.
Teaching and Learning Methods Duties in Laboratory Computer Software and Training.
Evaluation Methods Tests & Exams - Reporting - Presentations - Research Projects. Evaluation may be based on a combination of individual and group work.
C. Emotional and Values Goals and enable the learner to take the necessary knowledgeto manage new projects for the purpose, Monitoring and resolution of a decision in choosing the best project from an economic point of view, solving a problem or achieving a specific goal, then finishing the projects, the ability to schedule the implementation of project activities, conflicts within the projects.
Evaluation Methods
Exams, homework and classroom skills
Evaluation Methods
Dialogue and Discussion Style - Brainstorming Style - Reports
D. Transferred General and Qualifying Skills An idea about engineering projects, their types, and the role of surveying in them.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
And the discussion on the question, interaction and answer	Lectures	Project Management Portal		4	1
And the discussion on the question, interaction and answer	Lectures	Project Management Elements		4	2
And the discussion on the question, interaction and answer	Lectures	Projects in the Contemporary Business Environment		4	3
And the discussion on the question, interaction and answer	Lectures	Project Life Cycle		4	4
And the discussion on the question, interaction and answer	Lectures	Project Selection		4	5
And the discussion on the question, interaction and answer	Lectures	Project Management		4	6
And the discussion on the question, interaction and answer	Lectures	Project Manager Career Path		4	7
And the discussion on the question, interaction and answer	Lectures	Project organization		4	8
And the discussion on the question, interaction and answer	Lectures	Project Plan		4	9
And the discussion on the question, interaction and answer	Lectures	Project scheduling		4	10
And the discussion on the question, interaction and answer	Lectures	Project scheduling methods		4	11
And the discussion on the question, interaction and answer	Lectures	Project scheduling methods		4	12
And the discussion on the question, interaction and answer	Lectures	Project Control		4	13

And the discussion on the question, interaction and answer	Lectures	Project Asset Control		4	14
Answering the questions	Exams	examination		4	15

Infrastructure	
Mousa Ahmed Khairuddin.Dr. Written by (Contemporary Projects Management)	1 Required Textbooks
Haitham Hijazi – Initiator of Project Management – M1 Abdul Sattar Al-Ali.D.-General Projects Management-2	2 Main References (Sources)
	Recommended books and references (scientific journals, reports,....)
	in Electronic References, Websites ....

Course Development Plan
Using administrative problem-solving methods practically at the individual or group level with high efficiency. Presentation and practical presentation of the content of the project management course Innovation, development, and continuous improvement in the application of the program to help in the institutional decision-making

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve and demonstrate whether

they have made the most of the available learning opportunities. It should be linked to the program description.

Northern Technical University	Educational Institution
Kirkuk Engineering Technical College - Department of Survey Technologies Engineering	2. University/Scientific Department
Descriptive Engineering SUE103	3. Course Name/Code
Phase I	4. The Program(s) You Engage in
Quarterly	5. Attendance formats available
First Semester 2024	6. Semester /Year
60	7. Number of study hours (total)
20-10-2024	8. Date of Preparation of this description
9. Course Objectives	
Training the student's mind on imaginative visualization of objects and their representation on the ground	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
Cognitive Objectives 1. Representation of stereoscopic points on a plane 2- Study the positions and characteristics of the rectum in the space and represent them at the level 3- Study of the main levels and assistance and their practical applications 4- Study of the models and the individuals of their surfaces	
Skill Objectives of the Course Seeks through various projection methods)Centrality،Parallel), to show the mutual geometric relationships between(Points and the lines and levels and sizes), with the aim of accessing, throughScientific Research ContinuousProjective Measures Various AlternativeFor Analytical Engineering, to helpDesigner for translating his ideas into unambiguous spatial forms	
Teaching and Learning Methods	
B. Explanation, discussion and solution of examples Knowledge and understanding Representing solid points on a plane Study the positions and properties of the rectum in space and represent them on the plane Study the main and auxiliary levels and their practical applications Study of solids and their surfaces B - Explanation, discussion, and solving examples	
Evaluation Methods	
Exams, homework and classroom skills	

C. Emotional and Values Goals It helps the student who is determined to: - Developing his conceptual skills for the engineering space. - Accurately describe the geometric space through 2D drawings or 3D modeling. - Solving linear and angular measurement problems. - Solving perceptual problems (perspective) of different geometric shapes.
Evaluation Methods
Exams, homework and classroom skills
Evaluation Methods
Exams and homework and class assignments
d. Transferred general and qualifying skills (other skills related to employability and personal development). Descriptive engineering uses simple language to express basic ideasFor three-dimensional space Without resorting to abstract mathematical language, it can therefore be understood even by those who do not have a scientific background High.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	General Introduction - Basic Definitions in Descriptive Geometry and Related Topics Projection Levels and Axes	Understanding Descriptive Geometry and its Relationship to Engineering Topics	4	1
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Projection types: Central, Tilted, Vertical, Digital, Holographic (Measured)	Multiple projection theories	4	2
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Representation of a point with positive and negative coordinates	Understanding the Hadiths in a Void	4	3
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Representation of the rectum in its different directions	Placing the rectangle in the four quarters in the vacuum	4	4
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Status Issues	Placing the rectangle in the four quarters in the vacuum	4	5
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Measurement Problems	Placing the rectangle in the four quarters in the vacuum	4	6
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Initial Auxiliary Levels	Key Auxiliary Levels	4	7
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Secondary Auxiliary Levels	Objective of non-major auxiliary levels	4	8
Exams and homework and class assignments	Explanation, Discussion and Solving Examples	Geometric lines, levels, and surfaces – some bodies and crystals	The relationship between them	4	9

Exams and homework and class assignments	Explanation , Discussion and Solving Examples	A general study of geometric objects, their rotation or cutting them in a plane, finding the shape of the resulting sectors, finding straight intersection points for them, calculating their volumes and surface areas.	Geometric Objects	4	10
Exams and homework and class assignments	Explanation , Discussion and Solving Examples	Cube, parallelogram, and parallelofacial	Regular Bodies	4	11
Exams and homework and class assignments	Explanation , Discussion and Solving Examples	Publication : Trio, Quadruple Pyramid: Trio, Quadruple	Regular geometric objects	4	12
Exams and homework and class assignments	Explanation , Discussion and Solving Examples	Cylinder Head	Methods of Projecting Cylindrical Objects	4	13
Exams and homework and class assignments	Explanation , Discussion and Solving Examples	Flat surfaces, cubes, prisms, pyramids. At the paper level Uneven Surface Individuals: Cylinder	Rooftop Personnel	4	14
Exams and homework and class assignments	Explanation , Discussion and Solving Examples	Roofing Personnel	Rooftop Personnel	4	15

Infrastructure	
Medhat Fadil, University of Baghdad Press, Descriptive Engineering	1 Required Textbooks
Emmanuel Faraj Karim, Higher Education Press/Baghdad, Descriptive Engineering Part One	2 Main References (Sources)
Prepared for lectures and provided to students	Recommended books and references (scientific journals, reports,....)
	in Electronic References, Websites ....

Course Development Plan
The basic concepts of descriptive geometry are: definitionBasic Engineering Entities(pointˊDashˊlevelˊdirection(Infinite point)AC Milan (Infinite Line)· Terms of Affiliation: Point on Line, Line on Surface and Point on Surface. CasesIntersection: Between two lines, between a line and a surface, and between two surfaces. Conditionsparallelism and orthogonality(As special cases of intersection. Conditions of the Petition, especially betweenCones and betweenRotary Surfaces· Opposition، symmetry، opposite symmetry, perspectiveal synthesis، affinity، transformation، reverse transformation and regression·

Course description form
Course description

This course will provide the student with a foundation in mathematical principles and to solve the differential equations of first and higher order using classic mathematics methods, and their engineering applications.

Teaching Institution	Northern Technical University
Scientific Department / Center	Technical Engineering College-Kirkuk
Course name/code	Engineering Analysis
Forms of attendance available	weekly
Semester/year	Frist Semester/ Third Year
Number of hours of study (total)	3 theoretical hour/week, with a total of 45 hours/semester.
Date of preparation of this description	20-10-2024

Course Aims
Developing a mathematical relation for a given physical problem.
Solving the mathematical equations to get the unknown variables.
Choosing the appropriate solution method for the given differential equations.
Solving first, second and higher order of differential equations, using different method in classical mathematics.
Modeling and solving different engineering problems using classical mathematics.
Understanding Fourier series and solving its applications.
Understanding Power series and solving its applications.

Methods learning outcomes teaching, Learning and Assessment

A\ Knowledge and Understanding:

A1- Concept and applications of engineering analysis

A2- Modeling different engineering problems

A3- Solving different engineering problems using differential equations solving methods

A4- Understanding Fourier and Power series and solving their related engineering problems

B\ Subject- specific skills:

B1 – Solving different engineering analysis problems

B2 – Modeling different engineering problems

B3 – Solving Differential Equations of first, second, and higher orders

B4 – Solving different Fourier and Power series engineering problems

Teaching and learning methods:

Giving theoretical lectures in engineering analysis and forming and solving different problems using workshops. In-person lectures, e-learning, blended learning.

Assessment Methods:

Daily exams, quarterly exams (theoretical), homework solving.

C- Thinking Skills:

Formulating and solving engineering analysis problems, choosing the appropriate mathematical method to solve standard and nonstandard mathematical problems

Teaching and learning methods:

Giving theoretical, solving examples, assigning homework examples, doing workshops for solving engineering mathematical problems.

Assessment Methods:

Daily exams, quarterly exams (theoretical) - discussion of class work and home work examples, doing workshops to solve the engineering mathematical problems.

D- General and transferred skills (other skills related to employability and personal development).

Understanding and solving mathematical problems related to different engineering applications via classical mathematics and differential equations.

Program structure					
Week	Hours	Required Learning Outcomes	Unit Name/Subject	Teaching Method	Method of Assessment
1	3	Engineering Analysis	First Order Differential Equations	Theoretical presentation	Sudden and quarterly exams
2	3	Engineering Analysis	Methods of Solving First Order D.E.	Theoretical presentation	Sudden and quarterly exams
3	3	Engineering Analysis	Applications on First Order D.E.	Theoretical presentation	Sudden and quarterly exams
4	3	Engineering Analysis	Second Order Linear D.E. with Constant Coefficients	Theoretical presentation	Sudden and quarterly exams
5	3	Engineering Analysis	Applications on Second Order D.E.	Theoretical presentation	Sudden and quarterly exams
6	3	Engineering Analysis	Higher Order Linear D.E.	Theoretical presentation	Sudden and quarterly exams
7	3	Engineering Analysis	Applications on Higher Order D.E.	Theoretical presentation	Sudden and quarterly exams
8	3	Engineering Analysis	Integrating Factors	Theoretical presentation	Sudden and quarterly exams
9	3	Engineering Analysis	Applications on Integrating Factors	Theoretical presentation	Sudden and quarterly exams
10	3	Engineering Analysis	Fourier series for Periodic Functions	Theoretical presentation	Sudden and quarterly exams
11	3	Engineering Analysis	Applications on Fourier Series	Theoretical presentation	Sudden and quarterly exams
12	3	Engineering Analysis	Even and Odd Functions	Theoretical presentation	Sudden and quarterly exams
13	3	Engineering Analysis	Applications on Even and Odd Fourier Series	Theoretical presentation	Sudden and quarterly exams
14	3	Engineering Analysis	Power Series	Theoretical presentation	Sudden and quarterly exams

15	3	Engineering Analysis	Applications of Power Series	Theoretical presentation	Sudden and quarterly exams

Infrastructure	
Required Course Books	" Advanced Engineering Mathematics", by Erwin Kreyszig
Main references (sources)	"Mathematics - Schaum's Outline of Differential Equations", by Richard Bronson
Recommended books and references (scientific journals, reports,….)	"Advanced Engineering Mathematics", by C. Ray Wylie
B - Electronic references, Internet sites ...	Any other Advanced Engineering Mathematics book

Course Development Plan: Adding more recent subject in engineering analysis

Course Description Form

Course Description

Provide a basic understanding of how GIS and satellite imagery are used to visualize and analyze spatial data. As well as basic techniques for analyzing, processing, and generating geospatial data in both pixel-based formats (e.g., satellite imagery and digital terrain models) and vector-based formats (e.g., point, line, and polygon spatial data representations). Also, how to obtain high-resolution satellite imagery and other GIS data from online data servers.

Northern Technical University	Educational Institution
Kirkuk Engineering Technical College	Scientific Department/Center
Surveying Systems II	Course Name/Code
Weekly	Available Forms of Attendance
Courses _ Semester	Semester/Year
4 weeks (1 theoretical hour/week) and (3 practical hours/week), with a total of (4 hours/semester).	Number of Hours (Total)
20/10/2024	Date this description was prepared

Course Objectives:

The student will be introduced to the basic theoretical and practical applications of the GIS Fundamentals Unit, including:
1. Introduce basic GIS concepts: Provide a basic understanding of spatial data, including its types (vectors and rasters) and how geographic features are digitally represented.
2. Hands-on GIS Software: Provide students with basic skills in using common GIS software for tasks such as data import, map creation, and simple spatial queries.
3. Data visualization basics: Introduce students to how to create basic maps and graphs to communicate spatial information.
4. Spatial Awareness of Problem Solving: Develop an initial understanding of how to deal with problems from a spatial perspective.

Course Outcomes and Methods of Teaching, Learning and Assessment This course produces a student who is able to learn how to deal with data

A. Knowledge and Understanding:

Definition of Geographic Information Systems (GIS) and its essential components.
Explain the difference between vector and raster data formats.
Describe the common coordinate systems used in GIS (e.g., latitude and longitude, UTM).
Identify different types of spatial data used in GIS (e.g., points, lines, and polygons).

B. Skills:
Navigation and use of basic functions within GIS software is common.
Import spatial data into a GIS project.
Create simple maps that contain essential elements like the title, drawing legend, and scale.
Perform basic spatial queries to identify or analyze data based on location.
Create basic visualizations such as maps and graphs to represent spatial information.

C. Problem solving:
Apply basic spatial perspective to identify and analyze problems with a geographic component.
Formulate simple spatial queries to answer questions about geographic data.

D. Communications:
Communicate spatial information effectively with clear and concise maps and graphs.

E. Project work: Demonstrate the skills acquired through a small project using GIS software.
y. Data collection and integration: Exploring ways to obtain and integrate spatial data from different sources.

By achieving these results, students will gain a solid foundation in GIS concepts and basic software skills. This prepares them to further learn GIS or apply these skills in their chosen field.

C. Skill objectives of the course.
A1 – Preparing various reports on various topics in GIS
A2 – Data Collection and Analysis: Students learn how to generate data from satellite data, aerial imagery and other cadastral data.

Teaching and Learning Methods

E-learning, Blended learning, Face-to-face teaching, Practical application to programs in the classroom

Evaluation Methods

Daily exams, oral exams, cross-question and discussion tests, as well as written exams, monthly exams , final exams.

C. Emotional and Values Goals
Dealing with the basic principles of the basics of geographic information systems

d. Transferred general and qualifying skills (other skills related to employability and personal development).
D1. Extensive discussions on concepts
D2. Courses and seminars on the applications of geographic information systems
D3- Giving more different geographical data to students and making projects on them.

6					
Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical and practical presentation	Introduction to GIS	Introduction to GIS	4	1
Surprise and Semester Exams	Theoretical and practical presentation	GIS Components	GIS Components	4	2
Surprise and Semester Exams	Theoretical and practical presentation	Design and management of geographic databases	Design and management of geographic databases	4	3
Surprise and Semester Exams	Theoretical and practical presentation	Design and management of geographic databases	Design and management of geographic databases	4	4
Surprise and Semester Exams	Theoretical and practical presentation	Coordinate systems and map projections	Coordinate systems and map projections	4	5
Surprise and Semester Exams	Theoretical and practical presentation	Principles of Mapping - Mapping Design	Principles of Mapping - Mapping Design	4	6
Surprise and Semester Exams	Theoretical and practical presentation	Spatial Analysis in GIS	Spatial Analysis in GIS	4	7
Surprise and Semester Exams	Theoretical and practical presentation	Data models (vector data and raster data)	Data models (vector data and raster data)	4	8
Surprise and Semester Exams	Theoretical and practical presentation	Acquisition and management of spatial data (data sources)	Acquisition and management of spatial data (data sources)	4	9
Surprise and	Theoretical and practical presentation	Spatial Data Concepts	Spatial Data Concepts	4	10

Semester Exams					
Surprise and Semester Exams	Theoretical and practical presentation	Coordinate and projection systems	Coordinate and projection systems	4	11
Surprise and Semester Exams	Theoretical and practical presentation	Geodesy	Geodesy	4	12
Surprise and Semester Exams	Theoretical and practical presentation	Review	Review	4	13

Infrastructure	
1- GIS Fundamentals: A First Text on Geographic Information Systems 2- The Esri Guide to GIS Analysis	1 Required Textbooks
GIS Lounge: https://www.geographyrealm.com/ (Provides GIS news, tutorials, and job listings) Geospatial World: https://www.geospatialworld.net/news/ (Offers news and insights on the GIS industry) Directions Magazine: https://www.directionsmag.com/ (A publication focused on GIS technology and applications).	2 Main References (Sources)
, Research, Internet, Scientific Journals	Recommended books and references (scientific journals, reports,....)
, Research, Internet, Scientific Journals	in Electronic References, Websites ....

Course Development Plan
Using the software developed by Azri Company specialized in GIS in line with the labor market and developing and intensifying practical experiences.

Course description form
Course description/Quantitative Survey

This course will give the students a foundation in quantitative surveys and explain building material.

Teaching Institution	Northern Technical University
Scientific Department / Center	Technical College of Kirkuk
Course name/code	Quantitative Survey
Forms of attendance available	Weekly
Semester/year	2024-2025
Number of hours of study (total)	weeks (2 theoretical+3 practical hour/week)
Date of preparation of this description	2024-10-9

Course Aims

A-Studies soil foundation properties and all material that deal with construction building.

B – Cement manufacture, type, properties.

C – Aggregate Classification, type, source and properties.

D – Fresh concrete (Workability, Palpability, Segregation).

E- Brick (Type of brick, Advantages and disadvantages, Brick manufacture)

Methods Learning Outcomes Teaching, Learning, and Assessment

A-Cognitive objectives -At the end of this course, students will gain knowledge of soil foundation properties. .1 -Classifies the soil-making experimental and theoretical tests. - Being able to solve Engineering problems about soil compaction.
B- Subject-specific skills - Learn how to use the best materials for construction..4 functions. -Recognizing different types of soil and their properties. -Applying the theoretical method to solve a compaction equation and find the degree of compaction .
Teaching and learning methods
Giving theoretical and practical lectures, workshops.
Assessment Methods
In-class and online quizzes, homework, peer feedback activities and practice exams.
C- Thinking Skills Indicative content including the following: -Prerequisites for estimation, quantities and price .
Teaching and learning methods
Giving theoretical and practical lectures, workshops.
Assessment Methods
In-class and online quizzes, homework, peer feedback activities and practice exams.
D- General and transferred skills (other skills related to employability and personal development).

Program structure					
Week	Hours	Required Learning Outcomes	Unit Name/Subject	Teaching Method	Method of Assessment
1		A Review for soil properties		Theoretical presentation	Sudden and quarterly exams
2		Classification of soil + Soil deformation		Theoretical presentation	Sudden and quarterly exams
3		sieve analysis Hydrometer analysis		Theoretical presentation	Sudden and quarterly exams
4		Description of an assemblage of soil particle		Theoretical presentation	Sudden and quarterly exams
5		Compaction, type of compaction, factor affecting compaction.		Theoretical presentation	Sudden and quarterly exams
6		Cement manufacture Type of cement		Theoretical presentation	Sudden and quarterly exams
7		Cement properties		Theoretical and practical presentation	Sudden and quarterly exams
8		Aggregate Fine aggregate		Theoretical and practical presentation	Sudden and quarterly exams
9		Coarse aggregate Classification		Theoretical and practical presentation	Sudden and quarterly exams
10		Fresh concrete Workability		Theoretical and practical presentation	Sudden and quarterly exams
11		Palpability Segregation		Theoretical and practical presentation	Sudden and quarterly exams
12		Brick Type of brick		Theoretical and practical presentation	Sudden and quarterly exams
13		Advantages and disadvantages		Theoretical and practical presentation	Sudden and quarterly exams
14		Brick manufacture		Theoretical and practical presentation	Sudden and quarterly exams
15		Concrete Block		Theoretical presentation	Sudden and quarterly exams

Infrastructure	
Required Course Books	Course Books
Main references (sources)	"Advanced soil Engineering ", by Das
Recommended books and references (scientific journals, reports,….)	Building Construction Book / Zuhair Sakous
B - Electronic references, Internet sites ...	

Course Development Plan
field studies

Course Description

Northern Technical University	Educational Institution
Kirkuk Engineering Technical College	2. University/Scientific Department
Fundamentals of Photogrammetry / SUE203	3. Course Name/Code
Bologna Route	4. The Program(s) You Engage in
Came	5. Forms of attendance available
Quarterly	6. Semester /Year
125 Hours of Study	7. Number of study hours (total)
20/10/2024	8. Date of Preparation of this description

9. Course Objectives

The student will learn the basic concepts of photogrammetry and learn about working on different devices and programs for drawing aerial photographs and how to use them in their different ways.

10. Course Outcomes, Teaching, Learning and Assessment Methods

This course produces a student who is able to perform various skills from aerial surveys, such as projecting and lifting buildings from aerial photographs, calculating areas and coordinates from different aerial photographs.

Cognitive Objectives

1- Different Concepts of Photogrammetry and Aerial Surveying
2. Aerial Image Concepts
3- Concepts of Aerial Survey Work

Skill Objectives of the Course

1 – Preparing various airspace reports for various practical experiments

2 – Preparing calculations for photographic and aerial surveys and calculating coordinates and altitudes from photographs taken by air.

Teaching and Learning Methods

E-Learning, Blended Learning, Face-to-face Teaching

Evaluation Methods

Daily exams, oral exams, cross-question and discussion tests, as well as written exams, semester exams, final exams .

C. Emotional and Values Goals

1_ Dealing with the basic principles of airspace and seeking to apply them

d. Transferred general and qualifying skills (other skills related to employability and personal development).

1. Extensive discussions on concepts
2. Courses and student seminars on modern airspace applications
3- Field visits to vital and construction facilities
4- Coordinating with the various state departments to exchange skills

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
		A brief history of aerial surveying, remote sensing, its development and use in the present day, and the relationship between aerial surveying and sensing about and types of projections and types of images	The student understands a brief history of aerial surveying, remote sensing, its development and use in the present day, and the relationship between aerial survey and sensing about the types of projections and types of images.	5 hours per week (2 Theoretical + 3 Practical) Total 5 hours	First
		Difference Between Aerial Photos, Map and Some Important Terms	The student understands the difference between aerial photographs, a map, and some important terms	5 hours per week (2 Theoretical + 3 Practical) Total 10 hours	Second
		Vertical aerial photographs, geometric relationships, coordinate systems, scale and vertical aerial photographs over flat ground and over different terrain levels and medium scale	The student understands vertical aerial photographs, geometric relationships, coordinate systems, drawing scale, vertical aerial photographs over flat ground and over different terrain, and medium scale	5 hours per week (2 Theoretical + 3 Practical) Total 15 hours	Third
		The student understands other ways to calculate the scale of vertical aerial images and ground coordinates from vertical aerial photographs, calculate horizontal and oblique distances between points and displacement resulting from terrain, and calculate elevations	The student understands other ways to calculate the scale of vertical aerial images and ground coordinates from vertical aerial photographs, calculate horizontal and oblique distances between points and displacement resulting from	5 hours per week (2 Theoretical + 3 Practical) Total 20 hours	Fourth

			terrain, and calculate elevations		
		Stereoscopic vision and its foundations and depth perception using the eyes with or stereoscopic vision through images and their conditions and the use of stereoscopes with mirrors	The student understands stereoscopic vision and its foundations, and depth perception using the eyes with the holographic vision through images and its conditions, and the use of stereoscopes with mirrors.	5 hours per week (2 Theoretical + 3 Practical) Total 25 hours	V
		Flight Design, Aircraft Altitude, Local Scale, Longitudinal Interference, Lateral Interference, Baseline, and Calculation of the Total Image Count	The doctor understands the design of the airlines, altitude of the aircraft, the local scale, the longitudinal overlap, the lateral overlap, the baseline, and the calculation of the total number of images.	5 hours per week (2 Theoretical + 3 Practical) Total 30 hours	Sixth
		Stereoscopic Distance and the Relationship between Distance and Points Height and Distance Difference	The student understands stereoscopic distancing and the relationship between distancing, high points, and distancing differences.	5 hours per week (2 Theoretical + 3 Practical) Total 40 hours	Seventh and eighth
		The student will learn how to find the distance of the two basepoints of two consecutive pairs images and the equations of the distance	The student will learn how to find the distance of the two basepoints of two consecutive pairs images and the equations of the distance	5 hours per week (2 Theoretical + 3 Practical) Total 45 hours	Ninth
		Tilted aerial images in steering in tilt, turn and shift system and auxiliary axle system for oblique images	The student understands tilted aerial images in steering in the tilt, turn and deflection system and the auxiliary	5 hours per week (2 Theoretical + 3 Practical) Total 55 hours	X

			axis system of oblique images		
		Calendar of oblique aerial images, calendar foundations and calendar methods	The student understands the evaluation of oblique aerial images, the foundations of the calendar, and the methods of the calendar	5 hours per week (2 Theoretical + 3 Practical) Total 65 hours	Eleventh
		How to check the generated hologram	The student understands how the generated holographic model is verified	5 hours per week (2 Theoretical + 3 Practical) Total 75 hours	Twelfth
		Mosaic, its advantages, disadvantages, uses, types, and foundations of the hologram using inlaying devices, internal guidance, relative and absolute guidance	Mosaic, its advantages, disadvantages, uses, types, and foundations of the hologram using inlaying devices, internal guidance, relative and absolute guidance	5 hours per week (2 Theoretical + 3 Practical) Total 85 hours	XIII – XV

Infrastructure	
Aerial Photography Survey, Remote Sensing, stereo analyst	1 Required Textbooks
stereo analyst. 1 Airdas 14 Photographic Space Internet	2 Main References (Sources)
Photogrammetry Books Remote Sensing Books Scientific Reports in Free Websites	Recommended books and references (scientific journals, reports,....)
YouTube Tutorial https://www.youtube.com/watch?v=rsWDyJZG6bg https://www.youtube.com/watch?v=YCjskqSLRO4 https://www.youtube.com/watch?v=GGfNE5P8iik Free book and research sites including http://www.4shared.com/office/2VjkQJmOce/ Dawod_Remote_Sensing_2015.html https://www.geosystems.fr/images/PDF/2015 _StereoAnalyst_IMAGINE_Brochure_SCREEN.pdf	in Electronic References, Websites ....

Course Development Plan

Course Description

Northern Technical University	Educational Institution
Engineering Technical College – Kirkuk	2. University/Scientific Department
Arabic	3. Course Name/Code
	4. The Program(s) You Engage in
Weekly	5. Attendance formats available
	6. Semester /Year
60 hours	7. Number of study hours (total)
21\10\2024	8. Date of Preparation of this description
9. Course Objectives	
1. Developing a spirit of pride in the Arabic language. 2. Develop the student's language skills 3. Raising the level of professional and research students. 4. Developing the grammatical and literary abilities of the university student.	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
Cognitive Objectives - 1. Qualifying students to acquire knowledge and understanding of the intellectual foundations and applications of Arabic language sciences. A.2. Qualifying students to acquire knowledge and understanding of grammar. A.3. Qualifying students to acquire knowledge and understanding of morphology. A. 4. Qualifying students to acquire knowledge and understanding of the science of spelling and expression. A.5. Qualifying students to acquire knowledge and understanding of the science of literature. A-6 Qualifying students to acquire knowledge and understanding of the basic standards of Arabic language sciences.	
Skill Objectives of the Course B.1. Introduce the student to the importance of the Arabic language from a scientific and practical point of view. B.2 Developing Speaking Skills (Arabic) B-3: Qualifying the student with the knowledge and outputs of grammar. B.4 Develop the student's knowledge and perceptions.	
Teaching and Learning Methods	
Lecture	
Evaluation Methods	
Written and practical exams, semester exams, final exams	
C. Emotional and Values Goals 1. Teaching the student to receive C-2 Developing the student's ability to respond C-3 The student should be able to assess (give value) C-4 Improving the student's abilities to organize values C-5 Integration of value with the behavior of the individual (giving value by characterization).	
Teaching and Learning Methods	
Lecture	
Evaluation Methods	
Written and practical exams, semester exams, final exams	
Evaluation Methods	

Allocating prizes (books, certificates of appreciation). - Allocating a part of the student's evaluation of his/her participation in these activities. - Allocating a place in the scientific department or on the website to display the photos, products and names of the students. Distinguished people.
d. Transferred general and qualifying skills (other skills related to employability and personal development). D-1 Teaching the student oral and written communication skills D.2 Use of modern technological tools such as computers, the Internet and special scientific programs Prepare reports, tables, shapes and presentations. D-3: Encourage the student to work together as a team. D-4: Developing the student's abilities to make the best use of time (time management).

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise Questions	theoretical	Arabic	What do we study in Arabic and what is its importance? Why is the Arabic language called the language of the Qur'an? What are the other names for the Arabic language? What are the most important sciences of the Arabic language?	2	1
Surprise Questions	theoretical	Arabic	What's the problem? What is the difference between a word, a word, and a word? What are word sections? What are the names of names, verbs and letters?	2	2
Surprise Questions	theoretical	Arabic	What are the types of verb in terms of form? What are the parts of a verb in terms of tense? What are the parts of a verb in terms of structure?	2	3
Surprise Questions	theoretical	Arabic	What are the types of verb in terms of form? What are the parts of a verb in terms of tense? What are the parts of a verb in terms of structure?	2	4
Surprise Questions and Duties	theoretical	Arabic	What do we mean by hate? What do we mean by knowledge?	2	5
Surprise Questions	theoretical	Arabic	What do we mean by the building and the Arab? What are masonry scientists? What are the original and minor pronunciations?	2	6
Surprise Questions	theoretical	Arabic	What is a nominal sentence? What is the definition of a beginner and an informant? What are the types of a beginner? What are the types of news?	2	7
Surprise Quiz Questions	theoretical	Arabic	What is the definition of a doer? What are the rulings on the doer? What are the types of doers?	2	8
Surprise QuestionsExams	theoretical	Arabic	What is the definition of a vice actor? How do we formulate the passive verb? What are the rulings of the deputy actor? What is acting on behalf of the doer? What are the types of vice actor?	2	9

			What do we mean by the phenomenon of the difference between the dhaad and the dha? Why is the Arabic language called the language of Al-Dhad? What are the differences between Dhaad and Dha'a in terms of (name, drawing, pronunciation, and meaning)?	2	
			What do we mean by tied and open? What is the controller to differentiate between tying and open T? What are the positions of the tying of the tie	2	
			What is the meaning of Hamzat al-Wasl? What is the meaning of the cutting hamzah? What are the positions of Hamza?	2	
			What do we mean by numbering language and terminology? What are the types of female numerators? What is the shape of each type? What are the positions of each female numbering scientist?	2	
			The reading of the required text of the surah is controlled by the movements. Statement of the expressive judgment of the text.	2	
			What is the life of the poet Abu Firas al-Hamdani? Reading a poem: (The Weeping Dove) is controlled by movements. Analysis and clarification of the poem's verses.	2	

Infrastructure	
The Noble Qur'an. - Explanation of Ibn Aqeel. - Al-Wajeez in the Arabic language. - Arabic grammar (grammar and easy morphology) -Dictation rules.	1 Required Textbooks
Al-Wajeez in Arabic for non-specialists.	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in Electronic References, Websites ....

Course Development Plan
Developing the curriculum vocabulary to keep pace with developments in the field of applied uses of animals in order to develop Environmentally sustainable. Adopting new teaching methods. To learn about the experiences of the most developed countries in this field and benefit from their accumulated experience. Working to establish specialized laboratories in the field of zoology. alif

Course Description Form

This course description provides a concise summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve and demonstrate whether they have made the most of the available learning opportunities. It must be linked to the description of the program.

Course Description:

Northern Technical University\ Kirkuk Technical Engineering College	Educational Institution
Department of Survey Engineering	Scientific Department / Center
Baath crimes in Iraq	Course Name / Code
Came	Available Forms of Attendance
Chapters One and Two	Semester / Year
48 hours per year	Number of Hours (Total)
20\10\2024	Date this description was prepared
Course Objectives:	
Creating a comprehensive public knowledge of all the behaviors of the Baath Party during its rule.	
Introducing the student to the crimes committed by the Baath and its abuse of power.	
Introducing the student to the decisions of the Supreme Criminal Court on the trial of Saddam Hussein and his followers.	
Introduce the student to the violations committed by the Baathist regime of international and humanitarian law.	

Course Outcomes, Teaching, Learning and Assessment Methods

Knowledge Objectives :
1- Identifying the concept of crime and its types.
2- Identifying the details of the crimes discussed before the Supreme Criminal Court.
3- Identifying the environmental crimes committed by the Baath Party.
4- Identifying the crime of mass graves.
5- There is a message that we seek to convey to the students, that history is not merciless and will not be forgotten by either a politician or a regime that abuses its right at the expense of Iraqi citizens.

B . Course-specific Skill Objectives
Acquire a skill in identifying behaviors that are considered a crime in the Iraqi Penal Code No. (111) of 1969.
Identify the international conventions that countries are obliged to adopt.

Teaching and Learning Methods

Reading the books and the curriculum
Exercises and activities during and outside the lecture
Giving students daily preparation, the purpose of which is to give the student self-confidence, and the other goal is to distinguish between a good student and a bad student.

Evaluation Methods

1. Participation in the classroom
2. Assignments and exercises required of the student
3. Daily and Quarterly Exams
4. The student's behavior inside the hall.

C. Emotional and Values Goals
Graduating individuals who have knowledge and culture in everything related to the subject of Baath crimes in Iraq.
He made the student aware of the importance of including the Baath Party among the parties present.
Building a generation that believes in the importance of respecting human rights and adhering to international laws and norms.

Course Structure Chapter One					
Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
	Explanation and Discussion	The Concept of Crimes	Gain knowledge	2	The first
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Crime Sections	Gain knowledge	2	Second
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Types of International Crimes	Gain knowledge	2	Third
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Decisions of the Supreme Criminal Court	Gain knowledge	2	Fourth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Psychological and Social Crimes	Gain knowledge	2	V
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	The basic duties of the state and its three levels	Gain knowledge	2	Sixth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Mechanisms of Psychological Crimes	Gain knowledge	2	Seventh
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Effects of Psychological Crimes	Gain knowledge	2	Eighth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Social crimes	Gain knowledge	2	Ninth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	The militarization of society	Gain knowledge	2	X
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	The Baathist regime's position on religion	Gain knowledge	2	Week 11
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Baathist regime's violation of Iraqi laws	Gain knowledge	2	Week 12
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Some of the decisions of the political and military violations of the Baath regime	Gain knowledge	2	Week 13
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Baath regime prisons and detention places	Gain knowledge	2	Week 14

12. Structure of the Course Semester II

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Awarding Degrees to Participants	Explanation and Discussion	Environmental Crimes of the Baath Regime in Iraq	Gain knowledge	2	The first
Granting grades to participants and taking a daily exam In the lecture	Explanation and Discussion	War and Radioactive Pollution and Mine Explosion	Gain knowledge	2	Second
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Radioactive Material Contamination	Gain knowledge	2	Third
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Chemical bombardment of Halabja city	Gain knowledge	2	Fourth
Awarding Degrees to Participants	Explanation and Discussion	Destruction of Cities and Villages (Scorched-Earth Policy)	Gain knowledge	2	V
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	The crime of draining the marshes	Gain knowledge	2	Sixth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Dredging palm groves, trees and plantations	Gain knowledge	2	Seventh
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Mass Grave Crimes	Gain knowledge	2	Eighth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Events of the genocide cemeteries committed by the Baathist regime	Gain knowledge	2	Ninth
Granting grades to participants and conducting a daily exam in the lecture	Explanation and Discussion	Chronological Classification of Genocide Cemeteries in Iraq for the Period 1969 - 2003.	Gain knowledge	2	X

Infrastructure	
Binding prepared by the Ministry of Higher Education and Scientific Research	Required Textbooks
Hussein Aliwi Al-Ziadi, Dr. Abbas Attia Al-Quraishi, Environmental Crimes of the Baath Regime in Iraq, Publisher: Iraqi Center for Documenting Crimes of Extremism, Dar Al-Kafeel Press, 1st Edition, Holy Karbala, 2023. Salim Matar, Encyclopedia of the Iraqi Environment, First Arabic Edition, 2010. Archive of the Iraqi Center for Documenting Crimes of Extremism at the al-Abbas's (p) Holy Shrine.	Main Reference (s)
Muhammad Al-Fadel, Crimes against State Security, Al-Jadida Press, Damascus, 1978.	Recommended books and references (scientific journals, reports, ...)
	Electronic References, Websites, ...

Course Development Plan
1- Addressing the individual (irresponsible) decisions that were issued by Saddam Hussein. 2- Adding a topic that deals with the consequences of the Baathist regime's violations of international and humanitarian laws.

Course Description

Northern Technical University	Educational Institution
Engineering Technical College – Kirkuk	2. University/Scientific Department
English	3. Course Name/Code
	4. The Program(s) You Engage in
Weekly	5. Attendance formats available
Chapter One	6. Semester /Year
60 hours	7. Number of study hours (total)
20\10\2024	8. Date of Preparation of this description
9. Course Objectives	
• Developing communication skills: Enhancing the ability to speak and listen effectively in various daily and academic situations. • Improve reading skills: Develop critical reading skills and comprehension of written texts, including essays and literature. • Enhance writing skills: Improve academic and creative writing ability, including organizing ideas and using the right grammar. □ Learning vocabulary and grammar: Expanding students' vocabulary and enhancing their understanding of English grammar. Promote cultural interaction: Understanding English culture and its history, helping to promote cultural awareness and respect for diversity. • Apply the language in practical contexts: Enable students to use English in their professional fields, including writing resumes and business correspondence. • Develop critical thinking: Enhance the ability to think critically through analyzing texts and discussing different ideas. • Preparing students for tests: Prepare students for standardized tests in English, such as TOEFL or IELTS, if required. • Boost self-confidence: Build students' confidence in the use of the English language through practice and interaction. • Development of self-learning skills: Encourage students to develop self-paced learning strategies to continue improving their English skills outside of the classroom.	
10. Course Outcomes, Teaching, Learning and Assessment Methods	

Cognitive Objectives

- Understanding the grammar:

Learn basic English grammar, such as tenses, verbs, and nouns, and how to use them correctly.

- Vocabulary expansion:

Acquire new vocabulary in a variety of topics and apply it in different contexts.

- Understanding Texts:

Analyze and understand written texts, including articles, stories, and academic texts.

- Developing reading skills:

Understand different reading strategies, such as speed reading and critical reading.

- Applying Writing Skills:

Learn about different writing styles, including academic, formal, and creative writing.

- Appreciation of English-speaking cultures:

Understand the cultural and social aspects associated with the English language and its role in communication.

- Discourse Analysis:

Learn how to analyze speeches and conversations, and understand the dynamics between speakers.

- Understanding the elements of communication:

Recognize elements of effective communication, such as tone, gestures, and context.

- Developing listening skills:

Understand effective listening strategies and apply them in different situations.

- Identify text types:

Recognize the different types of literary and professional texts, and understand the characteristics of each genre.

Skill Objectives of the Course

- Oral communication skills:

Ability to express ideas clearly and confidently in everyday and professional conversations.
Use strategies such as active listening and active engagement.

- Writing skills:

Write a variety of texts in an organized and clear manner, such as articles, letters, and reports.
Apply the correct grammar and vocabulary in writing.

- Reading skills:

Use effective reading strategies such as identifying key ideas and supporting details.
Critically evaluate and understand texts.

- Listening skills:

Ability to understand and respond to conversations, lectures, and audio recordings.
Distinguish key ideas and supporting information in audio materials.

- Vocabulary expansion:

Use new vocabulary in appropriate contexts, enhancing students' ability to express.

- Text Analysis:

Ability to analyze literary or academic texts, and understand their deep meanings.

Teaching and Learning Methods

Lecture

Evaluation Methods

Written and practical exams, semester exams, final exams

C. Emotional and Values Goals

The ability to communicate with the outside world and keep pace with the development taking place

Teaching and Learning Methods

Lecture

Evaluation Methods

Written and practical exams, semester exams, final exams

Evaluation Methods

d. Transferred general and qualifying skills (other skills related to employability and personal development).

- Working to understand and apply linguistic rules in daily and professional life that require knowledge of the English language.

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise Questions	Lecture theory	English Language	Present simple	6	1,2,3.
Surprise Questions	Lecture theory	English Language	Past simple	6	4,5,6
Surprise Questions	Lecture theory	English Language	Present continuous	2	7
Surprise Questions	Lecture theory	English Language	Past continuous	2	8
Surprise Questions and Duties	Lecture theory	English Language	Wh questions in simple present	2	9
Surprise Questions	Lecture theory	English Language	Future Tense	2	10
Surprise Questions	Lecture theory	English Language	Modal verbs	6	11,12,13

Infrastructure	
Graham Brown, David Watson, "Cambridge IGCSE Information and communication technology", 3rd Edition (2020) Alan Evans, kendall Martin, Mary Anne Poatsy, "Technology in action complete", 16th edition (2020) Ahmed Banafa, "introduction to artificial intelligence (AI), 1st edition (2024) Al-Khidr Ali Al-Khidr Researchers, "Fundamentals of Computers" 2016 Dr. Adel Abdel Nour, "Introduction to the World of Artificial Intelligence" 2005	1 Required Textbooks
Reference Books	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in Electronic References, Websites ....

Course Development Plan
Conducting a review in English for students to learn about the basics of speaking in a basic way and preparing to discuss graduation research. alif

Course Description

Northern Technical University	Educational Institution
Engineering Technical College – Kirkuk	2. University/Scientific Department
Arabic	3. Course Name/Code
	4. The Program(s) You Engage in
Weekly	5. Attendance formats available
Chapter One	6. Semester /Year
60 hours	7. Number of study hours (total)
21\10\2024	8. Date of Preparation of this description
9. Course Objectives	
1. Developing a spirit of pride in the Arabic language. 2. Develop the student's language skills 3. Raising the level of professional and research students. 4. Developing the grammatical and literary abilities of the university student.	
10. Course Outcomes, Teaching, Learning and Assessment Methods	
Cognitive Objectives - 1. Qualifying students to acquire knowledge and understanding of the intellectual foundations and applications of Arabic language sciences. A.2. Qualifying students to acquire knowledge and understanding of grammar. A.3. Qualifying students to acquire knowledge and understanding of morphology. A. 4. Qualifying students to acquire knowledge and understanding of the science of spelling and expression. A.5. Qualifying students to acquire knowledge and understanding of the science of literature. A-6 Qualifying students to acquire knowledge and understanding of the basic standards of Arabic language sciences.	
Skill Objectives of the Course B.1. Introduce the student to the importance of the Arabic language from a scientific and practical point of view. B.2 Developing Speaking Skills (Arabic) B-3: Qualifying the student with the knowledge and outputs of grammar. B.4 Develop the student's knowledge and perceptions.	
Teaching and Learning Methods	
Lecture	
Evaluation Methods	
Written and practical exams, semester exams, final exams	
C. Emotional and Values Goals 1. Teaching the student to receive C-2 Developing the student's ability to respond C-3 The student should be able to assess (give value) C-4 Improving the student's abilities to organize values C-5 Integration of value with the behavior of the individual (giving value by characterization).	
Teaching and Learning Methods	
Lecture	
Evaluation Methods	
Written and practical exams, semester exams, final exams	
Evaluation Methods	

Allocating prizes (books, certificates of appreciation). - Allocating a part of the student's evaluation of his/her participation in these activities. - Allocating a place in the scientific department or on the website to display the photos, products and names of the students. Distinguished people.
d. Transferred general and qualifying skills (other skills related to employability and personal development). D-1 Teaching the student oral and written communication skills D.2 Use of modern technological tools such as computers, the Internet and special scientific programs Prepare reports, tables, shapes and presentations. D-3: Encourage the student to work together as a team. D-4: Developing the student's abilities to make the best use of time (time management).

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise Questions	theoretical	Arabic	What do we study in Arabic and what is its importance? Why is the Arabic language called the language of the Qur'an? What are the other names for the Arabic language? What are the most important sciences of the Arabic language?	2	1
Surprise Questions	theoretical	Arabic	What's the problem? What is the difference between a word, a word, and a word? What are word sections? What are the names of names, verbs and letters?	2	2
Surprise Questions	theoretical	Arabic	What are the types of verb in terms of form? What are the parts of a verb in terms of tense? What are the parts of a verb in terms of structure?	2	3
Surprise Questions	theoretical	Arabic	What are the types of verb in terms of form? What are the parts of a verb in terms of tense? What are the parts of a verb in terms of structure?	2	4
Surprise Questions and Duties	theoretical	Arabic	What do we mean by hate? What do we mean by knowledge?	2	5
Surprise Questions	theoretical	Arabic	What do we mean by the building and the Arab? What are masonry scientists? What are the original and minor pronunciations?	2	6
Surprise Questions	theoretical	Arabic	What is a nominal sentence? What is the definition of a beginner and an informant? What are the types of a beginner? What are the types of news?	2	7
Surprise Quiz Questions	theoretical	Arabic	What is the definition of a doer? What are the rulings on the doer? What are the types of doers?	2	8
Surprise QuestionsExams	theoretical	Arabic	What is the definition of a vice actor? How do we formulate the passive verb? What are the rulings of the deputy actor? What is acting on behalf of the doer? What are the types of vice actor?	2	9

			What do we mean by the phenomenon of the difference between the dhaad and the dha? Why is the Arabic language called the language of Al-Dhad? What are the differences between Dhaad and Dha'a in terms of (name, drawing, pronunciation, and meaning)?	2	
			What do we mean by tied and open? What is the controller to differentiate between tying and open T? What are the positions of the tying of the tie	2	
			What is the meaning of Hamzat al-Wasl? What is the meaning of the cutting hamzah? What are the positions of Hamza?	2	
			What do we mean by numbering language and terminology? What are the types of female numerators? What is the shape of each type? What are the positions of each female numbering scientist?	2	
			The reading of the required text of the surah is controlled by the movements. Statement of the expressive judgment of the text.	2	
			What is the life of the poet Abu Firas al-Hamdani? Reading a poem: (The Weeping Dove) is controlled by movements. Analysis and clarification of the poem's verses.	2	

Infrastructure	
The Noble Qur'an. - Explanation of Ibn Aqeel. - Al-Wajeez in the Arabic language. - Arabic grammar (grammar and easy morphology) -Dictation rules.	1 Required Textbooks
Al-Wajeez in Arabic for non-specialists.	2 Main References (Sources)
Research – Internet – Scientific Journals	Recommended books and references (scientific journals, reports,....)
Research – Internet – Scientific Journals	in Electronic References, Websites ....

Course Development Plan
Adopting new teaching methods. .

Course Description Form

Course description

1. Educational Institution / Northern Technical University / Kirkuk Engineering Technical College
2. Scientific Department / Department of Surveying Technologies Engineerin
3. Course Name/Code/ Cadastral Device Maintenance

4. Available Attendance Forms/Weekly

5. Semester / Year / Semester

6. Number of study hours (total) / 15 weeks (2 theoretical hours/week) and (3 practical hours/week), with a total of (75 hours/)

7. Date this description was prepared

11/6?2025

8. Course Objectives (General Course Objectives)

Introduce students to the types of errors, classify them, and use them in spatial operations, and use the principle of least squares in reducing the impact of errors on the measured results.

How to distinguish between angle measurement methods and their adjustment using theodolite, in addition to calculating the heights between points using differential adjustment and adjusting the errors that appear in the device, as well as training studer on how to handle errors that arise from the incorrect use of scanning tools

9. Course Outcomes , Teaching, Learning and Assessment Methods

Course Outcomes

Evaluation Methods	Teaching and Learning Methods	Output
Presentation/Lecture **Discussion/Questions**	**Lectures, Explainer Videos** **Lectures, Case Studies**	**A- Knowledge** **1- It knows the components of surveying devices and their different types.** **2. Explains the working principles of mechanical and electronic surveying devices.**
Practice Applied Exercises Practical Presentation Individual Activity	**Field Training, Workshops** **Case studies, use of real devices** **Participatory Education, Laboratories** **Sample reports, homework**	**B. Skills** **1- Applies the maintenance steps of the wiping devices accurately.** **2- Diagnoses common malfunctions in surveying devices.** **3- Uses inspection and calibration tools properly.** **4- Documents maintenance steps with technical reports.**

Role Acting Behavioral Assessment Group Activities Practical Attitudes	Group discussion, simulation Practical Performance Note Collaborative tasks Guided discussion, real-life examples	C. Values 1- Adheres to occupational safety standards during maintenance. 2- Be meticulous and attention to detail. 3- Works as a team during maintenance. 4- It keeps devices and equipment from damage.

10. Course Structure **(Theoretical and Practical Vocabulary)**

Evaluation Method	Teaching Method	Module Name / or Subject	Required Learning Outcomes	Hours	The week
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastr devices	**Accuracy, error definition, and use in space operations. Types of errors**	5	1
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Classify errors durir scans.	5	2
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	The principle of leas squar, the condition maximum problem a the way to solve it is create new auxiliary factors.	5	3
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Solve problems usin the least squares method	5	4
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	*Determination of the device constant in a tacheometry using* tl least squares metho	5	5

Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Definition of Furnae and their Use in Surveying Operatio giving some exampl in reading Furnaers and explaining some common mistakes th one makes in using Surveyor Appliance	5	6
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Methods of measuring angles by theodolites and measuring angles in way. Repetition	5	7
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Methods of measuri angles by theodolite and measuring angle By way. Reiteration	5	8
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Adjustment of theodolite device, initial correction	5	9
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Thiodolite Adjustme Permanent Control,	5	10
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Theodolite Device Errors	5	11
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Errors in theodolite work	5	12

Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Settlement, types of settlement. Simple leveling, composite leveling or different leveling, and adjusti leveling devices of a types	5	13
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Errors in Settlement Work and How to Make Corrections to Them	5	14
Surprise and Semester Exams	Theoretical an practical presentation	Maintenance of cadastra devices	Principle of Electronic Horizontal Distance Measurement Electromagnetic Distance Measurem Systems (Electromagnetic), Microwave System (Long Range)	5	15

11. Course Development Plan

Course Development Plan: Maintenance of Cadastral Devices

1. Course Description and Updating Objectives

- **Current Status: General and not precisely defined goals.**
- **Development Plan:**
  - **Reframe goals to be SMART .**
  - **Include specific learning outcomes: (knowledge, skills, values)**
  - **Linking the course to the labor market and the requirements of the profession.**

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2. Update Scientific Content

- **Current Status: Theoretical content that is predominantly traditional.**
- **Development Plan:**
  - **Introducing modern topics such as: electronic maintenance, calibration software, GNSS devices.**
  - **Connecting content to practical applications and real tasks.**
  - **Format the content to include short lessons, practical cases, and practical examples.**

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3. Developing teaching and learning methods

- **Current Situation: Focus on the traditional lecture.**
- **Development Plan:**
  - **Use active learning strategies such as:**
    - **Project-Based Learning (PBL)**
    - **Collaborative Learning**
    - **Virtualization**
  - **Integration of modern education technologies such as:**
    - **Interactive Videos**
    - **3D models of devices**
    - **E-learning platforms (such as Moodle or Microsoft Teams)**

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4. Update your calendar methods

- **Current Status: Theoretical tests only.**
- **Development Plan:**
  - **Diversification of Assessment Tools:**
    - **Practical Evaluation of Performance in the Workshop**
    - **Technical Reports**

        - Peer Evaluation
        - View maintenance projects
    - Design Rubrics for each learning director.

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5. Training of academic staff

- Current situation: Some teachers lack hands-on experience.
- Development Plan:
    - Holding workshops and courses in:
        - Maintenance of modern appliances
        - Modern Education Strategies
        - Effective Assessment Tools
    - Field visits to professional centers and specialized companies.

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6. Develop the learning environment

- Current Situation: Traditional Workshops.
- Development Plan:
    - Updating the workshop's equipment to include the latest surveying equipment.
    - Equipping the lecture hall with interactive screens.
    - Providing an environment that simulates practical reality (simulation lab).

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7. Continuous Evaluation and Feedback

- Development Plan:
    - Collect student feedback periodically.