

Course Description Form

1. Course name:	
Democracy and human rights	
2. Course code:	
NTU 100	
3. Level/Academic Year:	
First	
4. Description preparation date:	
17/7/2025	
5. Available attendance forms:	
Paper form including name, date of attendance and signature	
6. Number of credit hours (total) / Number of units (total):	
30 hours/2 units	
7. Name of course supervisor (mention all names if there are multiple supervisors):	
Name: Dr. Abdul Majeed Mahmoud Hamoudi amyl: Abdulmagid2020@ntu.edu.iq	
8. Course objectives:	
1Introducing the student to the most important laws related to human rights. 2Introducing the student to the most important Iraqi constitutions and their relationship to human rights. 3Teaching the student to respect the freedom of others in dealing with him, taking into account the cultural differences in the Iraqi environment.	Course objectives:
9. Teaching and learning strategies:	

• Dialogue–based learningAnd discussion. • Brainstorming. • learningCooperative and collective. • Practical training. • LearningMSelf.					Strategy:
10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watche s	week
Oral and written tests	Presentation, explanation, questionsAnd answers,dis cussionInte ractive and self-learning	Human rights, definition, and objectives.	For the student to understand First: Knowledge and understanding Second: Intellectual skills Third: Practical skills Fourth: Values and trends	2	1
Oral and written tests	Presentation, explanation, questionsAnd answers,dis cussionInte ractive and self-learning	The roots of human rights and their development throughout human history. Human rights in ancient times.	The student must be able to:: 1.Defines the roots of human rights 2.It reviews the most important historical stations. Which contributed to the development of the concept of human rights throughout the ages. 3.Explains how the concepts of justice, freedom, and equality were expressed. In ancient civilizations 4.Learn about	2	2

			ancient documents and principles		
Oral and written tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Human rights in ancient civilizations, especially the civilization of Mesopotamia. Human rights in divine laws, with a focus on human rights in Islam.	For the student to understand The concept of human rights as it appeared in pre-Christian civilizations. Learn about the most important ancient laws that dealt with rights. Explains how justice and rights were practiced in the Mesopotamian civilization.. Explain how divine laws dealt with the concept of rights and justice. Learn about human rights in Islam	2	3
Oral and written tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Human Rights in the Middle Ages	The student should get to know :- - The nature of society in the Middle Ages.inEurope,andThe Islamic world, etc.) and its impact on the concept of rights. - Explains how human rights were affected by feudal systems.. - He learns about the important documents that appeared at that time, - It determines the individual's status, social class, and its relationship to his	2	4

			rights.		
Oral and written tests and scientific reports	Presentatio n, explanation , questionsA nd answers,dis cussionInte ractive and self- learning	Human rights in doctrines, schools, and political theories. Human rights in corporations, their declarations, revolutions, and constitutions.	The student learns how the idea of human rights developed within Political and intellectual theories To distinguish between the positions of political doctrines on individual and collective rights.. And get to know The role of philosophers and thinkers In crystallizing the modern concept of human rights. It compares different political doctrines in their view of human rights..	2	5
Oral and written tests and scientific reports	Presentatio n, explanation , questionsA nd answers,dis cussionInte ractive and self- learning	Human Rights in Contemporary and Modern History: International Recognition of Human Rights	• Learn about the most important historical milestones in international recognition of human rights after World War II. • Explains the role of international organizations (the United Nations, the Council of Europe, the African Union, and the League of Arab States) in formulating and protecting rights. • Explains the principles of the main international conventions and treaties	2	6

			It reviews international and regional monitoring mechanisms for the implementation of human rights.		
Oral and written tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	International and regional recognition of human rights	For the student to know on :- The concept of international and regional recognition of human rights and the motives for its emergence after global wars and conflicts. Learn about the most important international agreements and conventions	2	7
Oral and written tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	NGOs and human rights	- To introduce the student to the concept of non-governmental organizations and their role in civil society. - Distinguish between types of NGOs (local, national, international) working in the field of human rights. - Learn about the most prominent international organizations defending human rights.	2	8
Oral and written tests	Presentation, explanation, questionsA	National Human Rights Organizations	The student will be able to understand what these organizations are and their role in society.	2	9

	nd answers,dis cussionInte ractive and self- learning		They will also be able to distinguish between national organizations and international organizations working in the same field. They will also understand that these institutions monitor rights, investigate violations, and report on the human rights situation..		
Oral and written tests	Presentatio n, explanation , questionsA nd answers,dis cussionInte ractive and self- learning	Human Rights in Iraqi Constitutions: Between Reality and Theory	The student should learn about the basic rights guaranteed by the Iraqi Constitution.. Understands the difference between the rights theoretically stipulated in the Constitution and the reality of their application in daily life. Identify the challenges facing human rights protection in Iraq in practice..	2	10
Oral, written and daily practical tests and scientific reports	Presentatio n, explanation , questionsA nd answers,dis cussionInte	The relationship between human rights and public freedoms in the Universal Declaration of Human Rights	The student should become familiar with the concept of human rights and public freedoms as stated in the Universal Declaration of Human Rights..	2	11

	Interactive and self-learning		Understands how rights and freedoms complement each other to form a system for protecting human dignity.. Learn about the most important public freedoms, such as freedom of expression, freedom of religion, and freedom of movement..		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussionInteractive and self-learning	The relationship between human rights and public freedoms in regional charters and national constitutions	The student should become familiar with the concept of human rights and public freedoms as stated in regional charters such as the European Convention on Human Rights, the African Charter on Human Rights, and others.. Understands how national constitutions regulate public freedoms and guarantee them among basic human rights.. Identify the similarities and differences between regional charters and national constitutions in	2	12

			protecting rights and freedoms..		
Oral and written tests and scientific reports	Explanation, questionsAnd answers, discussionInteractive and self-learning	Essential human rights and collective human rights	The student analyzes the importance of human rights in ensuring human survival and dignity.. Compares individual and collective rights in terms of application and challenges. Discusses how collective rights defend identity, culture, and diversity..		13
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questionsAnd answers, discussionInteractive and self-learning	Economic, social and cultural human rights, and civil and political human rights	The student should become familiar with the concept of economic, social and cultural human rights, such as the right to work, education, health, and adequate housing.. Understands the concept of civil and political human rights, such as the right to freedom, expression, political participation, and justice.. Recognizes the basic differences between economic, social and cultural rights and civil and political rights..	2	14

Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussionInteractive and self-learning	Contemporary Human Rights: The Reality of Development and the Right to a Clean Environment	The student will understand contemporary human rights and the importance of integrating them with the Sustainable Development Goals..	2	15
11. Course Evaluation:					
Tests + Exercises + Discussions + Questions					
12. Learning and teaching resources:					
Studies in Democracy and Human Rights Written by: Hadi Rabie Publisher: Dar Al-Janan for Publishing and Distribution 2016			Required textbooks (curriculum books, if any)		
“Democracy and Human Rights: Concepts, Measures and Relationships” by Dr. Todd Landman, published in 2018, discusses the concepts of democracy and human rights, how to measure them, and analyze the relationships between them.			Main References (Sources)		
The International Journal of Human Rights Publishes research on human rights issues around the world and international politics.			Recommended books and references (scientific journals, reports...)		
https://www.ohchr.org https://www.amnesty.org https://www.hrw.org			Electronic references, websites		

Course Description Form

1. Course name:					
English language (1)					
2. Course code:					
NTU101					
3. the chapterAcademic/ year					
4. Description preparation date					
17-7-2025					
5. Available attendance forms					
1. Weekly lesson schedule (theoretical)). 2. Discussions, scientific seminars, and other extracurricular activities					
6. Number of credit hours (total) / Number of units (total)					
7. Course Supervisor Name (List all names, if there is more than one)					
the name:M.M. Omar Ahmed Fathy e-mail: omar.ah.f@ntu.edu.iq					
8. Course objectives					
1. The student should be able to identify all English language skills and knowledge. 2. The student should be able to encourage and develop scientific research in the fields of the English language in general. 3. The student should have the ability to cooperate with local and international organizations in the field of English language development.					Goals
9. Teaching and learning strategies					
1. Interactive lectures. 2. Brainstorming. 3. Dialogue and discussion. 4. Assign tasks and report. 5. Assign teamwork to reveal leadership skills.					Strategy
10. Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning	watches	week

			outcomes		
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical:Scientific terms inYAgriculture	A2: Theoretical: To be able to know the scientific agricultural terms in the language.EnglishIn all agricultural specialties.	2 theoretic	the first
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical: Scientific terms inYFreetoPlant productionY	A2: Theoretical: To be able to know the scientific terms in the fieldPlant productionY	2 theoretic	the second
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical: Scientific terms inYFreetoAnimal productionY	A2: Theoretical: To be able to know the scientific terms in the field Animal productionY	2 theoretic	the third
Short exams,	Discussion method, lecture	theoretical: Terms Scientific in area protection plant	A2: Theoretical: To be able to know the	2 theoretic	Fourth

homework assignments, discussions	method		scientific terms in the field protection plant		
Short exams, homework assignments, discussions	Discussion method, lecture method	monthly exam	monthly exam	2 theoretic	Fifth
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical: Scientific terms in YFreetoFood Science	B2/Theoretical: To be able to know the scientific terms in the field Food Science	2 theoretic	Sixth
Short exams, homework assignments	Discussion method, lecture method	monthly exam	monthly exam	2 theoretic	Seventh

ments, discuss ions					
Short exams, homew ork assign ments, discuss ions	Discussion method, lecture method	theoretical: Scientific terms inYFreetoAgricult ural Economics and Social Sciences	A1/Theoretical: To be able to know the scientific terms in the fieldAgricultur al Economics and Social Sciences	2 theoretic	The eighth
Short exams, homew ork assign ments, discuss ions	Discussion method, lecture method	theoretical: Scientific terms inYFreetoagricult ural biotechnology	B2/Theoretical: To be able to know the scientific terms in the fieldagricultur al biotechnology	2 theoretic	Ninth
Short exams, homew ork assign ments, discuss	Discussion method, lecture method	theoretical: Scientific terms inYFreetolandYA nd water.	A2/Theoretical: To be able to know the scientific terms in the field of soil sciences.	2 theoretic	tenth

ions					
Short exams, homework assignments, discussions	Discussion method, lecture method	monthly exam	monthly exam	2 theoretic	eleventh
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical: Scientific terms in the field of agricultural engineering	B2/ To be able to know the scientific terms in the field of agricultural engineering.	2 theoretic	twelfth
Short exams, homework assignments, discussions	Discussion method, lecture method	theoretical: Scientific terms in the field of agricultural engineering theoretical: Article review	A1/ To be able to know the scientific terms in the field of agricultural engineering. Review of all English language lectures the student received during the academic year	2 theoretic	thirteenth
Short exams, homework assignments, discussions	Discussion method, lecture method				fourteenth
Short exams, homework assignments, discussions	Discussion method, lecture method				fifteenth

11. Course Evaluation	
((Oral exams / Written exams / Weekly reports / Daily attendance / Participation and interaction in lectures / Midterm and final exams))	
12. Learning and Teaching Resources	
Rapid Rewiw	Required textbooks (curriculum books, if available)
English Grammar	Main References (Sources)
Eurasea Article	Recommen ded books and references (scientific journals, reports...)
Lib.gin	Electronic references and websites

Course Description Form

1. Course name:	
Computer Principles (1)	
2. Course code:	
NTU102	
3. the chapterAcademic/ year	
4. Description preparation date	
17-7-2025	
5. Available attendance forms	
1. Weekly lesson schedule (theoretical) And my work). 2. Discussions, scientific seminars, and other extracurricular activities	
6. Number of credit hours (total) / Number of units (total)	
7. Course Supervisor Name (List all names, if there is more than one)	
the name:M.M. Manhal Mohammed Bashir e-mail: manhalbasher@ntu.edu.iq	
8. Course objectives	
- The student should be able toUnderstanding the Calculator – Calculator Generations – Hardware and Software Components - The student should be able to identifyWith the most important basic information about computers, computer generations, and operating systems. - The student should be able to identifyOperating systemMS–Dos, system concept, system flag, disks, directories and their levels, files, internal and external commands.	Goals
9. Teaching and learning strategies	
1. Interactive lectures.	Strategy

2. Brainstorming.	
3. Dialogue and discussion.	
4. Assign tasks and report.	
5. Assign teamwork to reveal leadership skills.	

10. Course structure

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Introduction to computers / computer systems / information technology / types of computers / input units / central processing unit / output units	B3/The importance of computers in our daily lives and our economy Knowledge of information technology and identification of computer parts and components	1 theoretical 1 practical	the first
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Main memory and its types / Data storage in memory / Factors affecting computer performance	A3/Learn about computers and memory types	1 theoretical 1 practical	the second
Short exams,	theoretical: Auditory methods: writing on	Definition of software and its types / Systems software:	A3/Learn how data is represented, the units of	1 theoretical	the third

homework assignments, discussions	the board method, direct dialogue method practical: Assignment and report	operating systems / Programming languages and programming systems / Application software.	measurement used, software and compilers, and types of operating systems.	1 practical	
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Introduction to Windows / Features / Turning on the device / Shutting down the device / Using the mouse / Components of the Windows screen: Taskbar: Icons: and their types (standard and general).	B3/ The student must be able to: Get to know system Windows And Learn about window movement and how to control it.	1 theoretical 1 practical	Fourth
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Control Panel / Desktop Control / Screen Saver / Window Colors and Fonts / Display Settings / Adjust Screen Colors / Modify Time and Date / Volume / Change Mouse Buttons / Control Double-Click Speed / Change Mouse Pointer / Control Mouse Speed / Install and Uninstall Programs	A3/ The student must be able to: Recognition How to use the control panel and how to make the necessary adjustments to it	1 theoretical 1 practical	Fifth

Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Minimize and maximize the window / close it permanently / close it temporarily / move the window / control the window size / methods for running applications and programs	A3/ The student should be able to know how to operate applications and programs.	1 theoretical 1 practical	Sixth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Sort list itemsstart / delete start menu items / add submenu to start menus / add new button to start menu	B3/ The student must be able to: Knowing how to sort a liststartAnd delete and add elements from it	1 theoretical 1 practical	Seventh
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Basic System Information / Turn off unwanted applications	A3/ The student must be able to: Knowing basic information about the operating system and how to work on it	1 theoretical 1 practical	The eighth

Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Windows ExplorerWindows Explorer / My Computer Icon / My Computer Window Parts	B3/ The student must be able to: Knowing the primary and secondary icons in the operating system	1 theoretical 1 practical	Ninth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Recycle Bin (delete, restore and empty the Recycle Bin) / Iconmy document	A3/ The student must be able to: Knowing how to work with the Recycle Bin and how to recover files from it and work on them	1 theoretical 1 practical	tenth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Defining Files and Folders / Identifying Files and Folders / Properties of Defining Files and Folders	A3/ The student must be able to: Defining files and folders and how to display file or folder properties	1 theoretical 1 practical	eleventh

Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Create files and folders / Rename files and folders / Move a file or folder / Copy a file or folder / Search for a file or folder / Create a shortcut icon for an application or file	B3/ The student should be able to create and delete files, change the name of each file, or create a shortcut for the application or file.	1 theoretical 1 practical	twelfth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Calculator / Notebook / Use the notebook to edit and create the file Painter / Screen Components	B3/ The student must be able to: Use the calculator and the notes or drawing icon	1 theoretical 1 practical	thirteenth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Create drawings / Specify foreground and background colors / Choose brush stroke size / Select and select the drawing tool / Save the drawing / Make the drawing a desktop background / Finish the drawing Entertainment programs Media	B3/ The student should be able to create, save, and use graphics as desktop backgrounds.	1 theoretical 1 practical	fourteenth

		player			
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	Viruses / Reason for the name / Definition / Methods of virus spread / Symptoms of virus infection / Methods of protection / Types of viruses Computer crimes / Theft / Hackers	A3/ The student should be able to identify the types of viruses that infect computers, the symptoms of virus infection, and how to protect against them.	1 theoretical 1 practical	fifteen

11. Course Evaluation

Grades are distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily oral tests, monthly or written tests, reports, etc.

12. Learning and Teaching Resources

Lectures prepared by the subject teacher	Required textbooks (curriculum books, if available)
Metzeelaer and Scharpf/Benjamin/Cummings Pub. 1995	Main References (Sources)
Library, scientific websites, access to lectures from other universities	Recommended books and references (scientific journals, reports...)
	Electronic references and websites

Course Description Form

1. Course name:	
Arabic language	
2. Course code:	
NTU103	
3. the chapterAcademic/ year	
4. Description preparation date	
17-7-2025	
5. Available attendance forms	
1. Weekly lesson schedule (theoretical)). 2. Discussions, scientific seminars, and other extracurricular activities	
6. Number of credit hours (total) / Number of units (total)	
7. Course Supervisor Name (List all names, if there is more than one)	
the name:M.M. Amna Maher Aziz e-mail: amina.mahir@ntu.edu.iq	
8. Course objectives	
1. The student must be able toCorrect reading. 2. The student will be able toCorrect writing and good use of punctuation. 3. The student must be able toThat the student acquires the ability to use the Arabic language correctly.. 4. The student should be able to separate elements from their groups or mixtures. 5. The student should be able to pronounceWith correct Arabic words, structures and styles in an interesting way 6. Accustoming the student to expressing his ideas clearly and correctly.	Goals
9. Teaching and learning strategies	
1. Interactive lectures. 2. Brainstorming. 3. Dialogue and discussion. 4. Assign tasks and report.	Strategy

5. Assign teamwork to reveal leadership skills.					
10. Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Short exams, homework assignments, discussions	Discussion method, lecture method	Introduction to linguistic errors- The closed taa and the open taa	1. Identify types of linguistic errors. 2. Differentiating between the open taa and the closed taa	2 theoretical	the first
Short exams, homework assignments, discussions	Discussion method, lecture method	Rules for writing the extended and shortened alif - solar and lunar letters	1. Differentiating between writing the extended alif and the short alif and the places where the two alifs are written 2. Differentiating between solar and lunar letters	2 theoretical	the second
Short exams, homework	Discussion method, lecture method	Dad and Tha	Differentiate between Dad and Tha	2 theoretical	the third

assignments, discussions					
Short exams, homework assignments, discussions	Discussion method, lecture method	Writing the hamza	Enabling the student toWriting the hamzaCorrect writing	2 theoretical	Fourth
Short exams, homework assignments, discussions	Discussion method, lecture method	punctuation marks	Get to knowSignsPunc tuationAnd write it in the correct place	2 theoretical	Fifth
Short exams, homework assignments, discuss	Discussion method, lecture method	Noun, verb, and the difference between them	1. Identify the noun and the verb and state the sign of each. 2. Differentiating between nouns and verbs 3. Explaining	2 theoretical	Sixth

ions			the types of verbs 4. Differentiating between types of verbs		
Short exams, homework assignments, discussions	Discussion method, lecture method	Effects	Recognizing the types of objects and differentiating between them	2 theoretical	Seventh
Short exams, homework assignments, discussions	Discussion method, lecture method	number	Enabling the student to write numbers correctly	2 theoretical	The eighth
Short exams, homework assignments, discuss	Discussion method, lecture method	Common language errors applications	Get to know Common language errorsAnd avoid it	2 theoretical	Ninth

ions					
Short exams, homework assignments, discussions	Discussion method, lecture method	Common language errors applications	Get to know Common language errorsAnd avoid it	2 theoretical	tenth
Short exams, homework assignments, discussions	Discussion method, lecture method	Noon and Tanween - Meanings of Prepositions	1. Differentiating between the letter noon and the letter tanween 2. Recognizing the meanings of prepositions	2 theoretical	eleven th
Short exams, homework assignments, discussions	Discussion method, lecture method	Formal aspects of administrative discourse	Get to know Formal aspects of administrative discourse	2 theoretical	twelfth
Short	Discussion method,	Language of administrative	Getting to know the language of	2 theoretical	thirteenth

exams, homew ork assign ments, discuss ions	lecture method	discourse	administrative discourse	cal	
Short exams, homew ork assign ments, discuss ions	Discussion method, lecture method	Language of administrative discourse	Getting to know the language of administrative discourse	2 theoreti cal	fourte enth
Short exams, homew ork assign ments, discuss ions	Discussion method, lecture method	Models From administrative correspondence	Get to knowModelsFro m administrative correspondenc e	2 theoreti cal	fifteen th
11. Course Evaluation					
((Oral exams / Written exams / Weekly reports / Daily attendance / Participation and interaction in lectures / Midterm and final exams))					
12. Learning and Teaching Resources					
Required books:				Required	

General Arabic Language Book for Technical Universities(Dr. Safaa Kazim MakkiandDr. Lama Mohammed Younis	textbooks (curriculum books, if available)
1- Clear Dictation: Abdul Majeed Al-Naimi, Daham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th edition, 1987 AD. 2- Lessons in language, grammar and spelling for state employees: Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd ed., 1984 AD. 3- Arabic Language for the Third Intermediate Grade: Fatima Nazim Al-Attabi, and others, 1st ed., 2018 AD. 4- General Arabic for Non-Specialization Departments: Abdul Qader Hassan Amin and others, Ministry of Higher Education and Scientific Research, 2nd ed., 2000. Inspired by Arabic Literature: Hafal Muhammad Amin, Al-Saado Press, Baghdad.	Main References (Sources)
Lessons in language, grammar and spelling for state employees, Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd ed., 1984 AD.	Recommended books and references (scientific journals, reports...)
	Electronic references and websites

Course Description Form

1. Course name:	
mathematics	
2. Course code:	
TAMO101	
3. Level/Academic Year:	
Levelfirst/ 2024 – 2025	
4. Description preparation date:	
17-7-2025	
5. Available attendance forms:	
Paper form including name, date of attendance and signature	
6. Number of credit hours (total) / Number of units (total):	
60/1	
7. Name of course supervisor (mention all names if there are multiple supervisors):	
the name:Qahtan Dhiyab Salman Saleh Al-Dhiyab	
amyl:Qahtan.Th.Salman@ntu.edu.iq	
8. Course objectives:	
That the bachelor's student be able to: - The student understands the concept of a function and can define it.. - The student should distinguish between a relationship and a function.. - The student will learn about the types of functions (such as: linear,	Course objectives:

quadratic, exponential...). • The student represents the functions graphically on the coordinate system.. • The student finds the value of the function for a given number.(The value of the function at a given x). • The student must determine the domain and range of the function.. • The student solves simple problems using the laws of functions.. • The student explains the change in the function (e.g., increase, decrease, stability). General objectives Formathematics 1. Developing the student's understanding of basic mathematical concepts. 2. Developing logical thinking and mathematical reasoning skills. 3. Enable the student to use basic arithmetic operations (addition, subtraction, multiplication, division) accurately.. 4. Developing the ability to solve mathematical problems in organized steps. 5. Training the student to use mathematical symbols and expressions correctly. 6. Enhancing graphic representation and data reading skills. 7. Enabling the student to use mathematics in everyday life situations. 8. Developing skills of analysis, comparison and classification in mathematical concepts. 9. Enhancing accuracy and attention in sports. 10. Developing self-confidence when dealing with mathematical problems and ideas. 11. Using educational and technical means to facilitate the learning of mathematical concepts. 12. Linking mathematics to other sciences and clarifying its role in different areas of life.	
9. Teaching and learning strategies:	
1. Dialogue–based learningAnd discussion. 2. Brainstorming. 3. learningCooperative. 4. Learning based onSimulation.	Strategy:

5. Practical training					
6. LearningMSelf.					
10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussionInteractive and self-learning	functions	The student understands the concept of a function as a relationship that links two or more variables in an organized way. For the student to knowOn the basic components of a function, such as: domain, range, and function rule. To differentiate the studentBetween different types of functions (linear, quadratic, fractional, exponential, and logarithmic). For the student to knowOn how to graph functions using coordinates. The student will analyze the properties of functions in terms of increasing, decreasing, symmetry, and terminal behavior. The student will be	1	1

			able to distinguish between different functions through their properties and graphical representation. The student will apply the concept of functions to solve mathematical and life problems.		
Test + Questions and Answers + Exercise Solutions	Lecture + Presentation + Explanatory Notes	Derivative of algebraic functions	For the student to understandThe concept of the derivative as a mathematical tool for measuring the instantaneous rate of change of a function at a given point. The student will learn the properties of algebraic functions that can be derived. The student will be able to distinguish between the types of algebraic functions and their different limits when applying differentiation. The student should apply basic derivation rules, such as: • Derivative of a constant • Derivative of power • multiplication rule • division rule The student will	1	2

			solve mathematical problems that require the use of differentiation rules to find the first derivatives. The student should use Derivatives in explaining instantaneous changes in life and scientific contexts (such as speed, growth, or decline).		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Integration of algebraic functions	For the student to understand The concept of integration as a mathematical tool for finding the original function or calculating areas under curves. The student will learn the relationship between integration and differentiation as two inverse operations. The student should be able to distinguish between the types of algebraic functions that can be integrated (polynomial, rational, radical). The student will apply the basic rules of integration to different types of algebraic functions. The student will solve mathematical problems involving	1	3

			the calculation of indefinite and definite integrals. The student will use integration to solve applied problems in fields such as engineering, physics, and economics. To connect the student Between integration and understanding quantitative changes through space representation and mathematical modeling.		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion, Interactive and self-learning	Non-algebraic functions: logarithmic function - derivative of logarithmic function	For the student to understand The concept of the logarithmic function as a non-algebraic function used in modeling phenomena with relative change. For the student to know On the properties of the general and natural logarithmic function, and its graphical representation. The student will be able to distinguish between the different forms of the logarithmic function, and determine its domain, range, and terminal behavior.	1	4

			The student will apply the rules of differentiation to calculate the derivatives of logarithmic functions. The student will use the chain rule to derive complex expressions containing logarithmic functions. The student will solve mathematical problems involving logarithmic functions in applied contexts. The student will analyze logarithmic models related to scientific and economic phenomena such as population growth and radioactive decay.		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Integration of a logarithmic function	For the student to understand The concept of integration of a logarithmic function and its importance in mathematical and scientific applications. For the student to know On the indefinite integral of a function $\ln(x)$ The student must	1	5

			applyIntegration techniques suitable for solving integrals containing logarithmic functions, such as:: Compensation method Integration by parts method The student must solveProblems involving complex logarithmic expressions that require combining more than one integration technique.. To connect the studentBetween logarithmic integration skills and applications in fields such as physics, engineering, and economics.. The student explainsIntegration results in life and scientific contexts, such as exponential growth and logarithmic regression..		
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Test + Questions and Answers + Exercise Solutions	Lecture + Presentatio n + Explanator y Notes	Exponential function: Derivative of the exponential function	For the student to understandThe concept of an exponential function as a non–algebraic function used to describe phenomena with accelerated growth or change. The student will learn about the natural exponential function e^x and the exponential functions with a general base a^x, and the properties of each. The student will be able to distinguish between the graphical representations and terminal behavior of different exponential functions. The student will apply the rules for differentiating simple	1	6
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			and complex exponential functions. The student should useChain rule for deriving expressions containing complex exponential functions. The student will solve applied problems involving exponential changes in fields such as physics, biology, economics, and engineering. The student explainsDifferentiation results in life and scientific contexts to understand rapid changes and dynamic models.		
Oral, written and daily practical tests and scientific	Presentation, explanation,	Integration of an exponential function	For the student to understandThe concept of integration	1	7

reports	questions and answers, discussion Interactive and self-learning		of exponential functions, and its importance in mathematical modeling and practical applications. For the student to know On the basis of the indefinite integral of the natural exponential function e^x and functions of the form ax^a. The student must apply Basic rules for integrating exponential functions in their simple and complex forms. The student should use Appropriate integration techniques such as substitution for integrating expressions containing		
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			exponential functions. The student must solve Definite and indefinite integrals involving exponential functions in mathematical and applied contexts. The student explains Integration results in practical applications from areas such as population growth, compound interest, and radioactive decay.. To connect the student Between the integration of exponential functions and models used in physics, biology, economics, and engineering.		
Written exam		First semester	Assess student	1	8

		exam	understanding		
Oral, written and daily practical tests and scientific reports	Presentatio n, explanation , questionsA nd answers,dis cussionInte ractive and self- learning	Trigonometric functions: derivative of trigonometric functions, integral of trigonometric functions	To enable the student to understand the importance of integrating trigonometric functions in the mathematical modeling of periodic phenomena in the natural and engineering sciences. For the student to knowOn the basic rules of integration of trigonometric functions such as: • $\sin[f_0](x)\sin(x)$ $\sin(x)$, $\cos[f_0](x)\cos(x)$ $\cos(x)$, $\tan[f_0](x)\tan(x)$ $\tan(x)$, and others. The student should apply appropriate integration methods, such as: • Direct integration • Compensation method The student will use trigonometric transformations (such as trigonometric identities) to simplify integral expressions involving powers or	1	9

			complex angles. The student will solve applied problems involving trigonometric functions related to waves, vibrations, and periodic motion. To enable the student to link the mathematical skills of trigonometric integration with their practical applications in fields such as engineering, physics, and acoustics. The student will be able to interpret integration results in the context of periodic phenomena such as alternating electric currents or simple harmonic motion.		
Test + Questions and Answers + Exercise Solutions	Lecture + Presentatio n + Explanator y Notes	Integration of implicit functions	The student will understand the concept of implicit functions and the reasons for using them when the relationships between variables are not explicit. The student gets to knowOn the steps of implicit differentiation and extracting implicit derivatives from non-	1	10

			explicit mathematical relationships. The student must applyImplicit differentiation techniques in the integration of relations not subject to explicit solvation. The student will use substitution methods to simplify and integrate expressions containing implicit functions. The student solvesIntegration problems involving implicit relationships between variables in engineering or physical contexts. The student will be able to link implicit integration with realistic modeling that requires dealing with indirectly related variables. The student explainsImplicit integration results in applications such as the motion of objects in nonlinear paths or		
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			complex physical systems..		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Differentiation of implicit functions	For the student to understandThe concept of implicit differentiation as a tool for deriving derivatives when the relationship between variables is not expressed in an explicit form. The student will learn the basic steps for deriving implicit equations using the chain rule. The student will apply implicit differentiation to extract $\frac{dy}{dx}$ in equations containing x and y that are implicitly related. The student should useThe chain rule is used precisely when dealing with derivatives in implicit equations, especially when complex expressions are involved..	1	11

			The student will solve mathematical problems that contain implicit relationships between variables in theoretical and applied contexts. To enable the student to link implicit differentiation to its practical applications in the fields of engineering, physics, and natural sciences. The student explains Implicit derivation results in contexts that require dealing with nonlinear equations or complex interconnected relationships..		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Integration methods: integration by parts	The student will apply the method of integration by parts to problems involving the product of functions (such as polynomials, logarithmic, trigonometric, and exponential). The student will solve complex integrals that require more than one step	1	12

			using integration by repeated parts. The student will be able to interpret the results of integration in applied contexts in the fields of mathematics, physics, and engineering. The student develops analytical and strategic skills in choosing integral parts to simplify complex expressions.		
Written exam		Second semester exam	Assess student understanding	1	13
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and answers, discussion Interactive and self-learning	Solving differential equations	The student will understand the concept of differential equations and their importance in describing changing phenomena in the natural sciences and engineering.. The student will be able to classify differential equations based on their order and linearity. The student will	1	14

			apply basic solution methods for differential equations according to their order and linearity. The student will analyze the behavior of dynamic systems using differential equations. To explain the role of differential equations in analyzing mathematical models and predicting outcomes in fields such as physics, economics, and biology. To develop the student's skills in using differential equations to solve real-world problems and provide practical solutions.		
Oral, written and daily practical tests and scientific reports	Presentation, explanation, questions and	Solving differential equations	To enable the student to understand the importance of differential equations	1	15

	answers, discussionInteractive and self-learning		as a mathematical tool for describing changing phenomena in the fields of physics, engineering, and economics. The student will be able to classify differential equations according to the order of the derivative and the type of linearity. The student will apply the main solution methods for first-order differential equations, such as separable equations and linear equations. The student will apply the method of solving second-order differential equations with constant coefficients using the characteristic equation. The student will explain how to use general and special solutions to describe the behavior of		
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			dynamical systems. To develop analytical skills that enable the student to understand advanced mathematical models and apply them in various scientific and real-life situations.		
11. Course Evaluation:					
Tests + Exercises + Discussions + Questions					
12. Learning and teaching resources:					
The vocabulary prescribed by the Ministry of Higher Education and Scientific Research			Required textbooks (curriculum books, if any)		
Applications in calculus Written by Dr. Salman bin Abdul Rahman Al-Salman Dr. Ibrahim Deeb Sarmini INTRODUCTION TO MATHEMATICAL ECONOMICS Third Edition EDWARD T. DOWLING, Ph.D.			Main References (Sources)		
Google Scholar, the scientific researcher portal			Recommended books and references (scientific journals, reports...)		
All sites that provide reliable sources			Electronic references, websites		

Course Description Form

1. Course name:	
Surveying and engineering drawing	
2. Course code:	
102 TAMO	
3. Level/Academic Year:	
Level the first/Chapter Two	
4. Description preparation date:	
17/7/ 2025	
5. Available attendance forms:	
Paper form including name, date of attendance and signature	
6. Number of credit hours (total) / Number of units (total):	
90/6	
7. Name of course supervisor (mention all names if there are multiple supervisors):	
Name: Mahmoud Shaker Mahmoud	
Email: msh41551@ntu.edu.iq	
8. Course objectives:	
1. Introducing the student to the most important basic information about Technologies Modern used in The field of geometry How to use them and choose the best ones. 2. Teaching and training students to use specialized machines in the field. Survey the surface of the land that is concerned In fields, slaughterhouses, and barns and many other fields. 3. Teaching and training the student to choose the type of machine. Or the appropriate tools to work on each project.	Course objectives:
9. Teaching and learning strategies:	

1. The learner acquires skills in using new and modern techniques in surveying and computer drawing. 2. Teaching the student how to manage the work site using the best devices and tools to obtain the best and most accurate results in the shortest time. 3. The student will develop his ideas in the future with equipment and machines that are compatible with the nature of the areas where the field survey is conducted.				Strategy:	
10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watche s	week
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	General concepts of surveying	The student will be able to understand the concepts and basics of surveying.	4	1
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Devices and tools used in measurement	The student will learn how to use a measuring tape.-The series-Pointer, peg, string and plumb linelike thatUse and maintenance of tools	4	2
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation +	Types of units of measurement and their conversions	The student will learn the standard units used in surveying, the types of measurement systems, and their conversions.	4	3

	Explanatory notes				
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	drawing scale	The student will learn how to use the drawing scale, its types, and how to extract the actual dimensions from maps using the drawing scale.	4	4
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Corrections needed in measuring distances	The student will learn - Correction for length bar difference - Correction for the difference in elevation between two points Correct the error by routing	4	5
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Scanning with chain and tape	The student will learn to extract dimensions, areas and all field work.	4	6
Test+Questions Answers + Exercise	Lecture + Presentation My	Topographic maps and their uses	The student will learn how to interpret and read maps.	4	7

solutions	presentation + Explanatory notes				
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Surveying with a compass	The student will have knowledge of the types and parts of the compass, methods of compass observation, as well as correcting compass observations and drawing polygons.	4	8
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Theodolite	The student will learn the components of the theodolite, its uses, and how to use it practically.	4	9
		First exam		4	10
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	AutoCAD program	The student will learn what AutoCAD is and its uses.	4	11

Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Using the program's user interface and how to adjust all settings	The student will learn to use drawing commands (lines, circles, rectangles, arcs, polygons, segmentation, etc.). They will also use the modify commands to copy, move, rotate, scale the drawing, and many other uses.	4	12
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	Learn the different ways to draw geometric shapes.	The student will learn how to draw squares, rectangles, and different types of triangles with rhombus shapes.	4	13
Test+Questions Answers + Exercise solutions	Lecture + Presentation My presentation + Explanatory notes	How to use a commandLINE to draw different geometric shapes, such as English letters like HEF -L	The student will be able to draw diagrams of poultry farms, fields and halls.	4	14
		Practical applications		4	15
11. Course Evaluation:					
Tests + Exercises + Discussions + SubmissionsQuestions					
12. Learning and teaching resources:					
City Survey Book 102 / General Organization			Required textbooks (curriculum books, if		

for Technical Education and Vocational Training / Kingdom of Saudi Arabia AutoCAD program	any)
	Main References (Sources)
	Recommended books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name:	
flat area	
2. Course code:	
TAMO103	
3. the chapterAcademic/ year	
4. Description preparation date	
17-7-2025	
5. Available attendance forms	
1. Weekly lesson schedule (theoretical) And my work). 2. Discussions, scientific seminars, and other extracurricular activities	
6. Number of credit hours (total) / Number of units (total)	
2/60	
7. Course Supervisor Name (List all names, if there is more than one)	
the name:Dr. Ahmed Faris Salem e-mail: ahmedalsawaf@ntu.edu.iq	
8. Course objectives	
1. The student should be able toLearn about space, its divisions, types and uses. 2. The student should be able toLearn how to take measurements, set up columns, and project them. 3. The student should have knowledge of errors, their types, and ways to overcome them. 4. The student should be able toLearn about mapping and drawing scales 5. The student should be able toIdentify obstacles and impediments in measuring distances and recording them in the field notebook.	Goals
9. Teaching and learning strategies	
1. Interactive lectures. 2. Brainstorming. 3. Dialogue and discussion. 4. Field training.	Strategy

5. Practical exercises.					
6. Field project.					
Self-learning.					
10. Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	theoretical:Definition of area - its divisions - its types - its uses - field notebook practical:Field exercise using the field notebook on campus	The student should be able to define area, know its types and names, and how to use measuring tools.	1theoretical 3practic	the first
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	theoretical: Measuring distances - its cases - erecting and lowering columns practical: Field exercises in measuring distances with different tools and using a field notebook	The student should be able to Measuring distances and their solutions and how to erect and lower columns	1theoretical 3practic	the second
Short exams, homework	theoretical:Auditory methods: writing on the board method,	theoretical: Types of errors and ways to overcome them in measuring distances	The student should be able to identify the types of measurement errors and ways to overcome them and correct measurements in	1theoretical 3practic	the thi

assignments, discussions	direct dialogue method practical: Assignment and report	practical: Correcting errors in measuring distances from the previous week	distances.		
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Obstacles and obstacles in measuring distances practical: Draw a polygon around a building to overcome the drawn obstacles.	The student should be able to Understand the types of obstacles faced in measuring distances	1 theoretical 3 practical	Fourth
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Mapping - Types of maps - Map scales - Methods of reducing and enlarging maps practical: From the above information, draw a map of a specific location in the institute, while training the students on some symbols and terms in mapping.	The student should be able to Drawing maps, knowing the type of each one, and methods of reducing and enlarging maps	1 theoretical 3 practical	Fifth
Short exams,	theoretical: Auditory methods:	theoretical: Flat panel scanning - tools - advantages -	The student should be able to identify the flat panel, its tools,	1 theoretical	Sixth

homework assignments, discussions	writing on the board method, direct dialogue method practical: Assignment and report	disadvantages - conditions of use practical: Learn about the flat plate, its tools, and lifting beams using the beam + front cross method.	advantages, disadvantages, and conditions for its use.	3practic	
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Methods of using the flat plate - the beam method - the front cross method practical: Reverse rotation and intersection method	The student should be able to Measuring the area of a flat newspaper using different methods	1theoretical 3practic	Sevent
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Flat plate methods - Rotation method - Reverse intersection method practical: Exercises in measuring areas by dividing them into triangles	The student should be able to Measuring areas using the surface sheet method and the rotation method	1theoretical 3practic	The eighth
Short exams,	theoretical: Auditory methods:	theoretical: Measuring areas using the field	The student should be able to Dividing the land plot into	1theoretical	Ninth

homework assignments, discussions	writing on the board method, direct dialogue method practical: Assignment and report	method - dividing the plot of land into triangles - erecting columns at equal intervals practical: Exercises in measuring areas by erecting columns at equal distances + two centimeters	triangles and measuring the area using the field method	3practic	
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Smyson's rule - placing columns at unequal intervals practical: Exercises on measuring areas by erecting columns at unequal intervals	The student should be able to place columns on the map using Smyson's rule.	1theoretical 3practic	tenth
Short exams, homework assignments, discussions	theoretical: Auditory methods: writing on the board method, direct dialogue method practical: Assignment and report	theoretical: Measurements on a map - Dividing the land into triangles - Using squares practical: Map exercises to measure areas by dividing them into triangles + squares	The student should be able to Use the squares on the map to divide it into triangles and measure them.	1theoretical 3practic	eleventh

Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	theoretical: Using the planning scale practical: Use a surveying device to measure areas on maps.	The student should be able to Using planning metrics	1theoretical 3practical	twelfth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	theoretical: Prismatic Compass - Magnetic and True North - Angles of All Kinds practical: Getting to know the prismatic compass - its parts - its uses - taking readings from it	The student should be able to Knowing the types of compass and determining directions and angles of all kinds	1theoretical 3practical	thirteenth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	theoretical: Reading angles between sides using a compass practical: Draw a polygon around a building and mark its corners.	The student should be able to Using a compass to read angles between sides	1theoretical 3practical	fourteenth
Short	theoretical:Auditory	theoretical:Calculating interior angles	The student should be able to	1theoretical	fifteenth

exams, homework assignments, discussions	methods: writing on the board method, direct dialogue method practical: Assignment and report	and directions of polygons using a compass practical: Perform calculations from the previous week and draw a map of the building.	Using a compass to determine the interior angles and directions of polygons	3practic	
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11. Course Evaluation

Grades are distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily oral tests, monthly or written tests, reports, etc.

12. Learning and Teaching Resources

Remember all the textbooks if any.	Required textbooks (curriculum books, if available)
Mention references (sources) if any.	Main References (Sources)
Scientific journals, reports and research related to flat area.	Recommended books and references (scientific journals, reports...)
All sites related to space and topography	Electronic references and websites

Course Description Form

1. Course name:	
General Chemistry	
2. Course code:	
TAMO104	
3. Level/Academic Year:	
Level 1	
4. Description preparation date:	
17-7-2025	
5. Available attendance forms:	
Paper form containing name, Date of attendance and signature	
6. Number of credit hours (total) / Number of units (total):	
2/60	
7. Name of course supervisor (mention all names if there are multiple supervisors):	
Name: Dr. Hala Aouf Abdel Rahman amyl: dr_hala.awf.chilmeran@ntu.edu.iq	
8. Course objectives:	
At the end of the course, the student is expected to be able to: 1. Understand the basic concepts of Chemistry and Solution Preparation 2. Explain the mechanisms Heat changes accompanying chemical reactions 3. Identify Types of chemical reactions and how to represent them with equations 4. Analyzing and interpreting laboratory results in a scientific manner 5. Understanding the relationship between Molar, normal, and percentage concentrations 6. Identify the Chemical bonds and their types	Course objectives:

7. Building a scientific foundation that qualifies students to study organic and analytical chemistry					
9. Teaching and learning strategies:					
There are many effective strategies for teaching the subject. General Chemistry , which aims to promote a deep understanding of genetic concepts and develop critical thinking skills. They have: 1. Learning based on dialogue and discussion. 2. brainstorming. 3. cooperative learning. 4. simulation-based learning. 5. Practical training. 6. Self-learning.				Strategy:	
10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Introduction to Chemistry and Solution Preparation	1- The student should know the basic concepts in chemistry and methods of preparing solutions. 2- The student understands the chemical properties of elements. 3- The student will be able to deduce the relationship	4	1

			between molar and normal concentrations to prepare solutions.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Periodic table of chemical elements	1- that to understand the student Properties of chemical elements and their classification in the periodic table 2- that to custom Student Chemical Properties of Elements Transition and its interactions. 3- The student can deduce the properties of the elements in the periodic table by classifying them into groups and periods according to their chemical properties.	4	2
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Atomic structure	1- The student should understand the properties and composition of the atom.	4	3

			2-thatThe student knows Dalton's atomic model. 3- The student can deduce the types of chemical bonds of compounds through their atomic structure.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Electronic theory of valence	1- The student should know the electronic theory of valence. 2- The student will understand the advantages and disadvantages of the electronic theory of valence. 3- The student will apply the concept of electronic valence theory to a number of chemical compounds.		4
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Types of chemical bonds	1-To know The studentTypes of chemical bonds 2- The student understands the advantages of ionic and	4	5

			covalent compounds. 3- The student will be able to infer the strength of the compound's bond by identifying the properties of chemical bonds.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Acids, bases and salts	1- The student should know the Arrhenius and Bronsted concepts of acids and bases. 2- The student understands Lewis concepts of acids and bases 3. The student can deduce the strength of acids and bases through: Arrhenius and Brønsted concept of acids and bases	4	6
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Oxidation-reduction reactions	1- The student should complete the chemical balance. 2- The student will understand the mathematical examples of oxidation and reduction reactions. 3- The student will be able to	4	7

			deduce the importance of oxidation-reduction reactions and their applications, such as electrical cells.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	halogens	1- The student will understand the general properties of halogens. 2- The student will learn how to prepare halogens. 3- To conclude the importance of halogens and their applications in the sterilizer industry.	4	8
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Electrochemistry	1- The student will understand electrochemical and electrolytic cells. 2- To understand the principle of cell function Electrochemical and electrolytic 3- The student will	4	9

			be able to deduce the oxidation and reduction reactions of electrical and electrolytic cells.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Metallic and non-metallic elements	1- The student will learn about oxidation potential and electron affinity. 2- The student understands ionization energy. 3- The student will be able to deduce the properties of metallic and non-metallic elements.	4	10
Questions and answers + exercise solutions	Lecture, presentation, illustrations	General properties of the elements in Group 4	1-For the student to know General properties of the elements in Group 4 2-The student should get to know Examples of elements in group 4. 3- The student	4	11

			will conclude the importance of the elements of the fourth group in the periodic table in semiconductor technology, such as germanium and silicon.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	General properties of the elements in Group 5	1- The student should be familiar with the general properties of the elements in the group.Fifth 2. The student should identify examples of elements in the group.fifthAnd. 3- The student will be able to conclude the importance of the elements of the fifth group in various applications such as nitrogen fertilizers and pesticides.	4	12
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Ideal and real gases	1- To familiarize the student with the properties of ideal gases. 2- The student	4	13

			understands the laws and mathematical examples. to deal and real gases 3- The student should conclude the basic difference between Ideal and real gases in terms of molecular size and the forces of attraction between them		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Standard tensile effort	1- The student should be familiar with the standard hydrogen potential. 2- The student should know the standard calomel electrode potential. 3- The student concludes that the standard hydrogen electrode potential is a reference for measuring	4	14

			electrode potentials. Other elements		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	nuclear chemistry	1- The student should get to know the concept of nuclear chemistry and its areas of application 2- The student should know types of nuclear radiation and their uses. 3. The student will be able to deduce the radioactivity of elements by identifying the nuclear properties of radioactive elements.	4	15

11. Course Evaluation:

Tests + Exercises + Discussions + Submissions Questions

12. Learning and teaching resources:

The vocabulary prescribed by the Ministry of Higher Education and Scientific Research	Required textbooks (curriculum books, if any)
Principles of General Chemistry, Dr. Mohi El-Din Al-Bakoush 2024	Main References (Sources)
Google Scholar, the scientific researcher portal	Recommended books and references (scientific journals, reports...)
All sites that provide reliable sources and also artificial intelligence tools	Electronic references, websites

Course Description Form

1. Course Name:	
Animal environment and behavior	
2. Course Code:	
ANP 101	
3. Semester / Year:	
Semester	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
78 / 8	
7. Course administrator's name (mention all, if more than one name)	
Name: Ameen Raaed Ali Email: ameen.r.ali@ntu.edu.iq	
8. Course Objectives	
Course Objectives	- Introducing students to the most important environmental factors: Students learn about the factors that affect living organisms and how the organism itself affects its surrounding environment. - Developing skills in studying animal behavior: Students learn methods for studying animal behavior and environmental interactions. - Educating students about environmental protection: The course highlights the role of humans in the environment and the importance of preserving it.
9. Teaching and Learning Strategies	
Strategy	Course Outcomes Definition: A set of knowledge, skills, and values that a course

seeks to achieve in students.

Importance: It provides the learner with a clear idea of what they will be able to do after completing the course, and it helps in designing and evaluating courses.

How They Are Determined: Course outcomes are determined based on the objectives of the academic program to which the course belongs.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student will be introduced to the concept of ecology.	Introduction to Ecology	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student will be introduced to climatic factors and their impact on the animal's environment.	Climate Factors and Their Impact on the Environment and Animals	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will be introduced to how the body regulates its temperature.	Body Temperature Regulation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will be introduced to camels' adaptations to living in desert environments.	Camels and the Desert Environment	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student will be introduced to how animals maintain their body temperature.	Thermogenesis in the Animal Body and Glands	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	The student will be introduced to the methods of heat loss.	Heat Loss	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student will be introduced to animal behaviors.	Animal Behavior	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student will be introduced to the types of behavior in animals.	Types of Animal Behavior	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student will be introduced to the most prominent types of	Cattle Behavior	Presentation, explanation, questions and	Oral, written and daily practical tests and scientific

		livestock behaviors.		answers, discussion	reports
10	5	The student will be introduced to the behavior of sheep.	Sheep Behavior	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	The student will be aware of the dangers of pollution and their impact on the animal's environment.	Pollution	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student will be introduced to how to approach animals.	Animal Approaches	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student will be introduced to methods of controlling livestock.	Cattle Control Methods	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student will be introduced to how to bed cows and the methods used for bedding.	Cattle Resting Methods	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student will be able to understand field operations.	Field Operations	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Animal Behavior, Ahmed Hammad Al-Hussaini
Recommended books and references (scientific journals, reports...)	book Ecology and animal behavior, Edward M. Barrows
Electronic References, Websites	www.wikipedia.org علم السلوك الحيواني - ويكيبيديا

Course Description Form

1. Course Name:	
Zoological techniques	
2. Course Code:	
ANP 102	
3. Semester / Year:	
Semester 2 / Year 1	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hr. / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Waseem Amer Hashem Email: wasseem_amer@ntu.edu.iq	
8. Course Objectives	
Course Objectives 1. Understanding the Structure and Function of Animals: The study of different organs and biological systems and how they function. 2. Animal Classification: Identifying and classifying different species based on common characteristics. 3. Animal Behavior: The study of how animals interact with each other and their environment. 4. Embryology: Understanding the stages of embryonic development in different animals. 5. Ecological Distribution: The study of how animals are distributed in different environments and the effects of environmental factors on them.	
9. Teaching and Learning Strategies	
Strategy	1. Active Learning: Includes group discussions, case studies, collaborative learning, and role-playing. 2. Brainstorming: Used to generate ideas and stimulate creative thinking, particularly in analyzing problems or developing new solutions. 3. Project-Based Learning: Suitable for animal production courses through research projects or evaluation of breeding systems. 4. Problem-Based Learning: Presents a real-life problem and encourages students

to analyze it and search for scientific solutions.

5. Interactive Lecture Strategy: Combines traditional lectures with questions, short discussions, and demonstrations.

6. Blended Learning: Combines traditional learning with e-learning.

7. Cooperative Learning: Relies on dividing students into working groups to solve a task or understand a topic.

8. Discussion and Dialogue: Suitable for controversial or ethical topics such as animal welfare or environmental values.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student should know the concept of zoology.	definition of poultry science.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student will learn about the types and shapes of animal cells.	The conditions that must be taken into account when classifying cell types.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will be able to distinguish between DNA.	RNA in animal cells.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student should know how tissue and organ are formed from cells.	The origin and classification of tissue.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student will learn about the function of the digestive system in farm animals.	Sections of the digestive system.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	The student should know the microscope and its parts.	What is a microscope made of?	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student should know the types of microscopes and their.	functions.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student	functions.	Presentation,	Oral, written and daily practical tests

		should know the shapes of animal cells and their.		explanation, questions and answers, discussion	and scientific reports
9	5	The student should know the divisions of animal cells.	The stages of division.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Living and non-living cell components and their .	functions in the animal cell	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	The student should be able to distinguish between vertebrates and invertebrates.	relationship to comparative anatomy.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student should learn about the respiratory system and the excretory system.	function of each system.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student should learn about the reproductive system and glands.	function of each gland.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student will be able to study in detail the people of the Hawanid Kingdom.	divisions.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student should be able to distinguish between living and non-living.	components.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Zoology and Anatomy
Main references (sources)	Authored by Zahraa Muslim Hassan
Recommended books and references (scientific journals, reports...)	he Journal of Basic and Applied Zoology (JOB AZ)
Electronic References,	https://sc.uobaghdad.edu.iq/wp-

Websites

<content/uploads/sites/64/2022/12/%D8%B9%D9%84%D9%85-%D8%A7%D9%84%D8%AD%D9%8A%D9%88%D8%A7%D9%86-%D8%A7%D9%84%D8%B9%D8%A7%D9%85.pdf>

Course Description Form

1. Course Name:	
Poultry production techniques	
2. Course Code:	
ANP 103	
3. Semester / Year:	
Semester	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
78 / 8	
7. Course administrator's name (mention all, if more than one name)	
Name: Ameen Raaed Ali Email: ameen.r.ali@ntu.edu.iq	
8. Course Objectives	
Course Objectives	- Provide students with basic knowledge about the types of poultry used in production, including meat and egg production. - Learn about the latest technologies used in poultry farm management, such as feeding systems, lighting, and climate control. - Analyze the impact of nutrition and breeding on poultry product quality and production efficiency. - Use modern technologies such as artificial intelligence and sensors to improve production and reduce waste.
9. Teaching and Learning Strategies	
Strategy	Course Outcomes

Definition: A set of knowledge, skills, and values that a course seeks to achieve in students.

Importance: It provides the learner with a clear idea of what they will be able to do after completing the course, and it helps in designing and evaluating courses.

How They Are Determined: Course outcomes are determined based on the objectives of the academic program to which the course belongs.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student will understand the concept of poultry science.	Introduction to Poultry Science	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student will understand the steps for establishing poultry farms.	Conditions to Consider When Establishing Poultry Farms	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will distinguish between types of poultry housing.	Types of Poultry Housing	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will understand the types of poultry.	Origin and Classification of Poultry	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student will understand poultry breeds.	Most Popular Poultry Breeds	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	The student will understand the environmental factors affecting poultry.	Environmental Factors Affecting Poultry Production	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student will understand the effect of humidity on poultry.	Humidity	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student will understand the effect of ventilation on poultry.	Ventilation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student will	Lighting and Density	Presentation,	Oral, written and

		understand the effects of lighting and density on poultry.		explanation, questions and answers, discussion	daily practical tests and scientific reports
10	5	The student will learn the requirements for raising poultry.	Poultry Raising Requirements	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	The student will understand the types of manholes and how to use them.	Drinking Water	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student will understand the ventilation requirements and how to use them.	Ventilation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student will understand the heating requirements and how to use them.	Heating	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student will understand the cooling requirements and how to use them.	Cooling	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student will understand the types of bedding used and the advantages of each.	Bedding	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Poultry farming and care, Dr. Sami Allam
Recommended books and references (scientific journals, reports...)	Textbook of Poultry Production and Management, Dr. Girrag Goyal
Electronic References, Websites	https://aalameldawagen.com/ar/articles

Course Description Form

1. Course Name:	
Forage crops	
2. Course Code:	
ANP 104	
3. Semester / Year:	
2024 - 2025	
4. Description Preparation Date:	
17 – 7 - 2025	
5. Available Attendance Forms:	
Paper form including name, date of attendance and signature	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Muhammad Amin Walid Taha Amin	
Email: mohmadameenm@ntu.edu.iq	
8. Course Objectives	
Course Objectives	By the end of the course, the student is expected to be able to: 1. Understand the basic concepts of forage crops and pastures 2. Explain the mechanisms by which various environmental and climatic factors and crop service processes affect forage production 3. Identify the types of forage crops 4. Analyze the effects of various service processes on production, both quantitatively

			and qualitatively		
			5. Understand the relationship between the composition of animal feeds and animal production, both quantitatively and qualitatively		
			6. Identify each forage crop separately		
			7. Understand the importance of these forages, their effects, and how to benefit from them		
9. Teaching and Learning Strategies					
Strategy		There are several effective strategies for teaching forage crops and pastures, which aim to foster a deep understanding of the effects of various plant physiological processes and develop students' critical thinking skills. These include: 1. Dialogue- and discussion-based learning. 2. Brainstorming. 3. Cooperative learning. 4. Simulation-based learning. 5. Practical training. 6. Self-directed learning.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1. The student should understand the basic concepts of the importance of livestock. 2. The student should	The importance of livestock, the importance of fodder crops and their role in meeting the fodder needs of livestock, the reality of	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		understand the importance of fodder crops and their role in meeting the fodder needs of livestock. 3. The student should understand the phenomena and implications of the influence of all climatic and service factors on the production of various fodder crops..	fodder crop cultivation in Iraq		
2	3	1. The student will understand the factors affecting fodder production and quality. 2. The student will know how to utilize saline and rain-fed lands for fodder	Factors affecting fodder production and quality, exploitation of saline and rain-fed lands in fodder crop production	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		crop production.			
3	3	1. The student will understand the environmental conditions suitable for Alfalfa production. 2. The student will understand the effects of these conditions on Alfalfa seed production..	(Alfalfa) economic importance, suitable environmental conditions, for the production of alfalfa seeds	Lecture, presentation, illustrations	Questions and answers + exercise solutions
4	3	1. The student will understand the economic importance of alfalfa. 2. The student will understand the various influences on alfalfa seed production.	Alfalfa: economic importance, suitable environmental conditions, seed production	Lecture, presentation, illustrations	Questions and answers + exercise solutions
5	3	1. The student will be able to identify the crops of hartaman, karta, and cocos. 2. The student	Hartaman, Kart, Kakouz economic importance, suitable environmental conditions, seed	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		will understand the different effects on seed production of each of these crops.	production		
6	3	1. The student will be familiar with forage crops. 2. The student will understand the economic importance, suitable environmental conditions, production principles, and uses of these crops.	Production of forage crops (1) Yellow corn (2) White corn) and their economic importance includes suitable environmental conditions, production principles, and their fodder uses.	Lecture, presentation, illustrations	Questions and answers + exercise solutions
7	3	1. The student will be familiar with the economic importance of Sudanese grass, its suitable environmental conditions, production principles, and fodder uses.	Sudanese grass: economic importance, suitable environmental conditions, production principles, fodder uses, species of the genus Sorghum, and the danger of green feed to	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		2. The student will be familiar with the species of the genus Sorghum. 3. The student will understand the dangers of green feed to animals due to hydrocyanic acid (HCN) poisoning.	animals as a result of hydrocyanic acid (HCN) poisoning.		
8	3	1. The student will understand the economic importance of barley, oats, and millet, as well as the basics of production. 2. The student will understand the species used for fodder and their uses for fodder.	Barley, oats, millet: economic importance, production principles, species used for fodder, and their exploitation for fodder.	Lecture, presentation, illustrations	Questions and answers + exercise solutions
9	3	1. The student should know the ingredients of concentrated feed.	Concentrated feed materials, their importance in animal nutrition, their sources, their	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		2. The student should understand their importance in animal nutrition. 3. The student should know their sources and nutritional content (chemical composition).	content of nutritional elements (their chemical composition).		
10	3	1. The student will know the definition of feed mixtures. 2. The student will understand their importance and types. 3. The student will be familiar with the basic elements of feed mixtures.	Feed mixtures, definition, importance, types, basic elements included in the feed mixture.	Lecture, presentation, illustrations	Questions and answers + exercise solutions
11	3	1. The student will understand what threshing is, its definition, and its importance in animal nutrition.	Threshing, definition, its importance in animal nutrition, why do we resort to threshing, determining the	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		2. The student will understand determining the appropriate time for cutting based on growth stages, drying methods, and the types of forage loss that occur during threshing.	appropriate time for cutting according to the growth stages, drying methods, types of loss of feed material that occurs during threshing.		
12	3	1. The student will know: silage, its definition, the importance of its production, and the manufacturing steps. 2. The student will know how to identify the cutting stages, the chemical changes in fodder during preservation, and methods for preserving silage. 3. The student will know the	Silage, its definition, the importance of its manufacture, manufacturing steps, determining the cutting stages, chemical changes in the feed during preservation, methods of preserving silage, preservatives, types of loss in nutritional value resulting from preservation.	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		techniques used in preservatives and the types of loss in nutritional value resulting from preservation.			
13	3	1. The student should know: What are pastures? 2. The student should know the definition and importance of pastures. 3. The student should know the types of pastures.	Pastures, definition, importance, types	Lecture, presentation, illustrations	Questions and answers + exercise solutions
14	3	1. The student will understand the basics of quantitative evaluation of pasture plants. 2. The student will understand the benefits of identifying these basics. 3. The student will understand	Fundamentals of quantitative evaluation of pasture plants, determining pasture productivity	Lecture, presentation, illustrations	Questions and answers + exercise solutions

		the benefits of determining pasture productivity.			
15	3	1. The student will identify the causes of the deterioration of natural pastures. 2. The student will understand methods for improving natural pastures and how to preserve them.	Causes of deterioration of natural pastures, methods of improving natural pastures and how to preserve them.		
11. Course Evaluation :					
1 – Weekly Preparation ----- 5% 2 – Weekly Tests ----- 5% 3 – Monthly Written Tests ----- 70% 4 – Reports ----- 5% 5 – Discussions ----- 5% 6 – Attendance ----- 5% 7 – Asking Questions ----- 5% Total ----- 100%					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			The vocabulary prescribed by the Ministry of Higher Education and Scientific Research		

Main references (sources)	Al-Ani, Tariq Ali and Mr. Irfan Muhammad Arshad (1983). Production of fodder crops and pastures. Technical Institutes Foundation. Al-Tikriti, Ramadan Ahmed Al-Tayef and Tawakkul Younis Rizq and Hikmat Askar Al-Rumi (1981). Fodder crops and pastures. Dar Al-Kutub Foundation for Printing and Publishing, University of Mosul. Mayouf, Mahmoud Ahmed and Abdullah Qasim Al-Fakhri (1982). Introduction to legumes in Iraq. Abdullah, Ghazi Mahmoud (1976). Some methods used in studies of natural pastures. Ministry of Agriculture and Agrarian Reform, Directorate of Natural Pastures, Department of Agricultural Affairs, Bulletin No.
Recommended books and references (scientific journals, reports...)	Google scholar, researcher gate
Electronic References, Websites	All sites that provide reliable sources and also artificial intelligence tools

Course Description Form

1. Course Name:
Sheep and goat production techniques
2. Course Code:
ANP 105
3. Semester / Year:
Semester 1 / Year 1
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
200 hr. / 8 Units
7. Course administrator's name (mention all, if more than one name)
Name: Waseem Amer Hashem Email: wasseem_amer@ntu.edu.iq
8. Course Objectives
Course Objectives • 1. Apply theories and concepts related to sheep and goat production to practical practice. • 2. Be able to analyze and evaluate production systems to improve efficiency and quality. • 3. Use modern technologies to improve sheep productivity and quality. • 4. Be able to care for and treat animals. • 5. Enhance students' understanding of the importance of applying animal welfare standards and how to implement them in animal production.
9. Teaching and Learning Strategies
Strategy 1. Project-based learning: Students develop an applied project, such as designing a sheep farm management plan or evaluating a goat feeding system. 2. Active learning: This includes class discussions, analysis of real-life cases (such as fertility problems or diseases in the herd), and group activities. 3. Motivated micro-lessons: Divide the content into short units and use video presentations or field photos.

4. Field visits and virtual simulations: Visit sheep and goat farms or use virtual reality technologies to observe breeding and care practices.
5. Brainstorming and problem-solving: Present a real-life production problem, such as "low growth rate in a particular herd," and encourage students to propose scientific solutions.
6. Collaborative learning: Divide students into groups to design a plan to improve herd fertility or develop a feeding protocol.
7. Integrating e-learning and digital resources: Provide recorded lectures, explanatory videos, and scientific articles for analysis.
8. Guided discussions on animal values and behavior: such as discussing the ethics of sheep farming or animal welfare in production techniques.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical + 3 practical	Acquire knowledge and skills	The economic importance of sheep and goat production	Introductory lecture and discussions about the curriculum	Homework
2	2 theoretical + 3 practical	Introduces students to the different types of sheep and goats	Sheep and goat breeds and their classification methods	Presentation, explanation, questions and answers, discussion	Quiz Exam
3	2 theoretical + 3 practical	The most important difficulties facing sheep farming	Reproduction	Presentation, explanation, questions and answers, discussion	Report
4	2 theoretical + 3 practical	Crossbreeding methods and production of high-yielding strains	sexual maturity	Presentation, explanation, questions and answers, discussion	Quiz Exam
5	2 theoretical + 3 practical	Ovulation rate and factors affecting it	Ways to improve and increase reproductive performance Fetal death	Presentation, explanation, questions and answers, discussion	Oral Questions and Answers
6	2 theoretical + 3 practical	Preparing females for birth	Female behavior at birth: death at birth until death until	Presentation, explanation, questions and answers, discussion	Homework

			weaning		
7	2 theoretical + 3 practical	Sheep and goat nutrition	Nutritional Habits Female and Male Nutrition	Presentation, explanation, questions and answers, discussion	Homework
8	2 theoretical + 3 practical	monthly exam 1			
9	2 theoretical + 3 practical	Feeding lambs and kids	Feeding Methods for Young Animals Weaning and Breastfeeding Systems	Presentation, explanation, questions and answers, discussion	Report
10	2 theoretical + 3 practical	Milk production in sheep	The Economic Importance of Sheep Milk Production The Importance of Goat Milk Methods for Measuring Milk Production	Presentation, explanation, questions and answers, discussion	Quiz Exam
11	2 theoretical + 3 practical	Growth, development and meat production	Postnatal Growth and Development Methods of Measuring Growth	Presentation, explanation, questions and answers, discussion	Oral Questions and Answers
12	2 theoretical + 3 practical	Wool and hair production	Characteristics of wool fibers Density and percentage of sacs Characteristic s of Iraqi wool	Presentation, explanation, questions and answers, discussion	Homework
13	2 theoretical + 3 practical	monthly exam 2			
14	2 theoretical + 3 practical	Improving the productive qualities of sheep	Cell and Genetics Quantitative Traits Genetic Equivalence	Introductory lecture and discussions about the curriculum	Report
15	2 theoretical + 3 practical	Improving productive qualities	Genetic Improvement Methods Biotechnology in Animal	Presentation, explanation, questions and answers, discussion	Quiz Exam

			Breeding and Genetics		
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Sheep and Goat Production Book		
Main references (sources)			Al-Jalili Fakhri Zuhair		
Recommended books and references (scientific journals, reports...)			Sheep and Goat Production Handbook.pdf		
Electronic References, Websites			https://www.boerboksa.co.za/Publications/Articles/New/Sheep%20and%20Goat%20Production%20Handbook.pdf		

Course Description Form

1. Course Name:
Principles of animal production
2. Course Code:
ANP151
3. Semester / Year:
Semester 2 / Year 1
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hr. \ 5Units
7. Course administrator's name (mention all, if more than one name)
Name: harith nafi shuker Email: harithalmansour@ntu.edu.iq
8. Course Objectives
Objectives 1. – Introduce students to the basic concepts and terminology in animal production science 2. – Explain the anatomical structure and basic physiological functions of the most important productive animals (cattle, sheep, goats, poultry, pigs, camels, rabbits, bees, and fish). 3. – Understand the principles of animal genetics and reproduction and their relationship improving production traits. 4. Master the principles of nutrition and management. 5. – Introduce students to the different types of feed materials and their nutritional components. 6. – Explain the basic nutritional needs of animals at various stages of production (growth, fattening, gestation, lactation, and egg laying).
9. Teaching and Learning Strategies
1. Problem-based learning: Using real-life problems to promote critical thinking and learning. 2. Cooperative learning: Encouraging teamwork and collaboration among students. 3. Field visits: Organizing field visits to health or veterinary centers.

4. Self-directed learning: Encouraging students to engage independent learning and research.
5. Project-based learning: Encouraging students to work on research projects.
6. Learning through Discussion: Encourage students to participate discussions and debates.
7. Continuous Assessment: Conduct ongoing assessments throughout the semester.
8. Self-Assessment: Encourage students to evaluate their performance and identify areas for improvement.
9. Additional Resources: Provide additional resources such as books and electronic references.
10. Summative Assessment: Conduct a final assessment at the end of the semester.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Not knowing the principles of animal production	The economic importance of sheep, the advantages of sheep farming, the origin of sheep, and methods of dividing sheep.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student should learn about sheep breeds.	Global sheep breeds, Iraqi sheep	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will be able to establish the herd.	Establishing a sheep flock, choosing the breed, flock size, when to buy sheep	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student demonstrates knowledge by being able to describe (brood preparation, hormone injection, egg collection, fertilization, hatching)	The student demonstrates knowledge of the ability to identify reproductive timing and age of puberty.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	The student knows the dates of pregnancy and birth in lambs.	Pregnancy, birth, care and raising of lambs	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Student knowledge of feeding schedules	Sheep feeding	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student should have the ability to produce meat and fatten lambs.	Meat production, growth and development in sheep, fattening lambs, meat	Presentation, explanation, questions and answers,	Oral, written and daily practical tests and scientific reports

			cutting	discussion	
8	5	The student should know the milk production processes.	Milk production, milk production process and methods of measuring it, structure and physiology of the mammary gland	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student should have information about wool production.	Wool production, properties and characteristics of wool, growth of wool fibers	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Students learn the composition and arrangement of wool.	Wool composition, wool grades and ranks, some general characteristics of wool	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	Students were able to apply genetic improvement.	Genetic improvement of sheep, improvement methods, improvement of Iraqi sheep	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student should be able to develop a health care program.	Sheep health care	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student learns from knowing the importance of goats.	The economic importance of goats, the origin of goats, and goat breeds	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Iraqi goats are distinguished by their milk and hair production.	Iraqi goats, goat reproduction, milk production, hair and skin in goats	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student is able to produce a condenser for lambs.	Inheritance and selection of mothers	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of animal production
Main references (sources)	Animal and Poultry Nutrition Dr. Nabil • Abdel Fattah Kamel
Recommended books and references (scientific journals, reports...)	Fundamentals of Animal Production, Dr. Abdel Moneim Hegazy
Electronic References, Websites	Sheep and Goat Science (R. Wild 2021)

Course Description Form

1. Course Name:
Laboratories techniques
2. Course Code:
ANP 152
3. Semester / Year:
Semester 6 / Year 3
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
150 hr. \ 6 Units
7. Course administrator's name (mention all, if more than one name)
Name: Yahya Natiq Mohammed Email: yahyanatiq2003@ntu.edu.iq
8. Course Objectives
1. Understanding Laboratory Medicine: Studying the importance of laboratory diagnosis of diseases that can affect animals. 2. Identifying the Parts of a Laboratory: Identifying the types, types, and specialties of laboratory equipment. 3. Studying Pathogens: Understanding the basics of disease diagnosis. 4. Methods of Collecting Pathological Samples: Studying the methods of collecting, storing and transporting samples to the laboratory. 5. Understand how a spectrophotometer works. 6. Understand how a centrifuge and a distillation device work. 7. Occupational safety and prevention in laboratories. 8. Study modern techniques used in laboratory diagnostics.
9. Teaching and Learning Strategies
1. Problem-based learning: Using real-life problems to promote critical thinking and learning. 2. Cooperative learning: Encouraging teamwork and collaboration among students. 3. Field visits: Organizing field visits to health or veterinary centers.

4. Self-directed learning: Encouraging students to engage independent learning and research.
5. Project-based learning: Encouraging students to work on research projects.
6. Learning through Discussion: Encourage students to participate in discussions and debates.
7. Continuous Assessment: Conduct ongoing assessments throughout the semester.
8. Self-Assessment: Encourage students to evaluate their performance and identify areas for improvement.
9. Additional Resources: Provide additional resources such as books and electronic references.
10. Summative Assessment: Conduct a final assessment at the end of the semester.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student learns about laboratory medicine and its importance in diagnosing animal diseases.	Introduction: Definition of laboratory medicine and its importance in diagnosing animal diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student learns about the types of samples.	Laboratory samples: Types of samples.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student learns about the methods of collecting pathological samples.	Methods of collecting pathological samples.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student learns about the methods of preserving and transporting laboratory samples.	Storage, preservation, and transportation of laboratory samples.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	The student learns about the most important chemicals used in laboratories.	Chemicals used in laboratories.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Occupational Safety in Medical Laboratories	The student learns about occupational safety principles.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Centrifuge	The student learns about the	Presentation,	Oral, written and

			operation of a centrifuge.	explanation, questions and answers, discussion	daily practical tests and scientific reports
8	5	Distillation Device	The student learns about the operation of a distillation device.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Spectrophotometer	The student learns about the operation of a spectrophotometer.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Incubator and electric oven	The student learns how an incubator and an electric oven work.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	Autoclave: Sterilizing materials	The student learns how an autoclave works: sterilizing materials.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	Exam	A written test is taken to assess student progress.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	Blood tests: Hb, PCV	The student learns about blood tests.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Blood tests: Red and white blood cell counts, and platelets	The student learns about cellular blood tests.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	Advanced modern technologies for disease diagnosis: PCR, ELISA	The student learns about some advanced modern techniques for diagnosing diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books any)	No curricular books
Main references (sources)	OIE. (2006). Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. : http://www.oie.int
Recommended books and references (scientific journals, reports...)	Coles, E. H. (1986). Veterinary clinical pathology. 4th ed., WB Saunders Co Philadelphia, London .Toronto
Electronic References, Websites	https://www.youtube.com/shorts/C68hlabh9c