Course Description Form

1. Course Name:
fingerling production
2. Course Code:
ANP 255
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)
٧٥/ ٣
7. Course administrator's name (mention all, if more than one name)
Name: harith nafi shuker Email: harithalmansour@ntu.edu.iq
8. Course Objectives

Course Objectives	**• The general objectives of the Fish Fingerling Course focus on gaining experience in understanding the management of the most sensitive stage of fish farming. The main components available to you for decision-making are:** **• 1. Tourist Inspiration (Knowledge and Understanding):** **• Understand the fish life cycle (egg → larva → fingerling → fry → adult).** **• Subsequent study of fingerlings (growth, nutrition, behavior).** **• Analyze the harmful factors affecting fingerling survival (temperature, oxygen, ammonia, pH).** **• Know common diseases and methods of preventing them at this stage.**

	2. Applied Transfer (Appropriate Skills): **• Learn techniques for transferring fingerlings between laboratories without laboratories.** **• Design appropriate feeding programs (feed types, email, publishers).** **• Implement basic water quality monitoring and control methods.** **• Diagnose and treat chronic diseases or illnesses.** **• 3. Strategic Options (Planning and Management):** **• Develop hatchery management to provide fingerling survival services.** **• Analyze the economic feasibility of fingerling rearing (costs, losses, and specialization).** **• Understand the role of fingerlings in fish sustainability (maintaining fish stocks and combating overfishing).** **• 4. No Choice in the Labor Market:** **• Qualify job seekers in fish farming, hatcheries, and aquatic research centers.** **• Utilize them from project management, strong aquaculture, and from the fingerling stage.**

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	He does not know the concept of fish fingerling production.	Fish reproductive biology, development of reproductive organs	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student should learn the steps of producing fish eggs and sperm.	Production of eggs and sperm, fertilized egg	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student should distinguish between external and internal factors that affect reproduction.	Control of the reproductive cycle, external and internal factors	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)	Artificial fish propagation, definition and importance	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	The student knows the classification of hormones according to their function (stimulating sexual maturation - causing ovulation - inhibiting reproduction)	Types of hormones used in artificial reproduction	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Student knowledge of mother selection criteria	Artificial propagation techniques and steps. Selection and preparation of mothers.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	1. The student must have the knowledge to choose the appropriate hormone. 2. Accurately calculate the dosage.	Hormonal induction and sexual stimulation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student should know how to simplify the critical steps (fertilization, egg washing, incubation)	Artificial insemination and preparation of fertilized eggs for incubation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student should have information about egg incubator conditions (temperature, oxygen, lighting) to prevent fungal growth.	Artificial hatching and rearing of hatched larvae in the laboratory	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Students learn the basic biological phenomena to observe in larvae (e.g., yolk sac reabsorption, organ development).	Biology of fish larvae rearing	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	Students were able to apply intensive rearing	Fingerling production method	Presentation, explanation,	Oral, written and daily practical

		techniques to transform larvae into healthy fingerlings,		questions and answers, discussion	tests and scientific reports
12	5	To know the technical and economic specifications of fingerlings ready for marketing or transport to production farms.	Production of advanced fingerlings (kidneys)	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student learns the practical side of pond management (such as heating and ventilation system).	Wintering of fingerlings and mothers	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	To include operations management to achieve high production efficiency and sustainable quality.	Organization of work and production in hatcheries	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student will be able to distinguish the applications of genetics to improve the productivity of mothers and the quality of breeds.	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)	
Main references (sources)	Fish Farming: From Hatching to Marketing, Dr. Muhammad Ali Hassan, "Fish Farming in Arid Areas" (Dr. Issam Haji, 2022).
Recommended books and references (scientific journals, reports…)	Handbook on Fish Production ،Larval Fish Nutrition
Electronic References, Websites	https://www.fao.org/4/y4162e/y4162e00.htm

Course Description Form

1. Course Name:
Meat technology and marketing
2. Course Code:
ANP٢٥٢
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: Mohammed Waad Mohammed Email: mohammed.waad88@ntu.edu.iq
8. Course Objectives

Course Objectives	**• Provide students with basic knowledge about meat varieties.** **• Learn about the latest technologies used in meat farm management.** **• Analyze the impact of nutrition and breeding on the quality of meat produced.** **• Use modern technologies to improve production.**

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 should know the concept of meat science.	Introduction to meat science	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	Meat production and its relationship to the meat industry	Conditions to be considered when establishing meat production farms and slaughterhouses	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The biological importance of meat production	The importance of meat for the human body	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	Classification of types of meat	Carcass cuts	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	Per capita share of domestic production	Total share per person	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Meat production patterns	Environmental factors affecting meat production	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Definition of marketing	Marketing science	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	Modern technologies in marketing systems	Modern marketing technologies	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Marketing issues	Marketing problems	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Marketing types	Marketing channels	Presentation,	Oral, written and

		illustrative program		explanation, questions and answers, discussion	daily practical tests and scientific reports
11	5	Animal transport and animal transport vehicles	Means of transportation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	Growth and development of meat animals	Changes in carcass components	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	Changes in the proportions of carcass components	Carcass components ratios	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Optimal investment for efficient meat production	Meat production efficiency	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
١٥	٥	Environment and management	Environment and management for meat animals	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)	• Primary sources: Lectures by Asst. Prof. Dr. Amira Mohammed Saleh Al-Rubaie / University of Baghdad, College of Agricultural Engineering Sciences • Book of meat production /ghon ewart
Recommended books and references (scientific journals, reports…)	• Al-Taie, Munir Abboud and Al-Moussawi, Umm Al-Bashar Hamid Jaber (1992). Practical Meat and Fish Technology. College of Agriculture, University of Basra, 142 pages. • Al-Shareek, Youssef Mohammed (2005). Meat Technology. Al-Fateh University Publications, Tripoli, Libya, 376 pages. • Al-Afandy, Salah Mahmoud Youssef (2012). Meat Health and Safety, General Authority for Export and Import Control, Arab Republic of Egypt, 100 pages.
Electronic References, Websites	Meat production and processing on wekibidia Wekipedia.org

Course Description Form

1 .Course Title:
Genetics
٢.Course Code:
ANP 209
٣.Level / Academic Year:
second Year / 2024–2025
4.Date of Description Preparation:
17/07/2025
5.Available Attendance Modes:
In-person
6.Total Credit Hours / Units:
60 hours (1 theoretical + 3 practical) × 15 weeks
7.Course Coordinator (All names if multiple):
Name: Hanin Mowaffaq Ahmed Email: haneen.mowfak@ntu.edu.iq
8.Course Objectives:
• Understanding the fundamental principles of genetics, including Mendel's laws and various inheritance patterns. • Analyzing genetic material (DNA and RNA) and their roles in the transmission of traits and gene expression. • Identifying mechanisms of trait inheritance from parents to offspring and explaining genetic mutations and their effects. • Applying genetic concepts to improve animal and plant production through selection and hybridization. • Interpreting modern applications in genetics, such as genetic engineering and gene editing
9. Teaching and Learning Strategies:
• Discussion and dialogue strategy • Brainstorming • Self-learning • Group collaborative assignments

- Report writing task

10.Course Structure:

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4 Hours (1Theory+3 3 Practical)	The student should **identi** cell components and **distinguish** between type cell division. **(A, B)**	Cell and Cell Divis	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports.
2	4 Hours (1Theory+3 3 Practical	The student should **expla** the relationship between division and sexual reproduction. **(B, C)**	Reproduction, Meiosis, and Sexu Differences in Ani	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports.
3	4 Hours (1Theory+3 3 Practical	The student should **analy** gene structure and the function of the genetic co **(D)**	Genetic Code and Molecular Structure of Gene	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
4	4 Hours (1Theory+3 3 Practical	The student should **apply** Mendel's laws to genetic cases. **(C, B)**	Gregor Mendel, H Experiments, Gene Mendelian Equatic Dominant and Recessive Genes	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
5	4 Hours (1Theory+3 3 Practical	The student should **comp** types of dominance and **analyze** the results. **(D, E**	Incomplete Dominance, Feath Color Inheritance, Sex-Influenced Tra	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
6	4 Hours (1Theory+3 3 Practical	The student should **construct** genetic crosses based on dominance and influenced traits. **(C, F)**	Incomplete Dominance, Feath Color Inheritance, Sex-Influenced Tra	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
7	4 Hours (1Theory+3 3 Practical	The student should **distinguish** between gene types and **evaluate** their effects on the organism. **(E)**	Lethal and Semi-Lethal Genes, Vitality-Reducing Genes, and Super-Vital Genes	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
8	4 Hours (1Theory+3 3 Practical	The student should **analy** sex-linked trait inheritanc and **interpret** inheritance patterns. **(D, B)**	–	Presentation, explanation, Q&A, interactive discussion, self-learning.	Written examination
9	4 Hours (1Theory+3 3 Practical	The student should **apply** concept of crossing over pedigree analysis. **(C, D)**	Alleles and Multip Effects (Pleiotropy	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports

10	4 Hours (1Theory+3 3 Practical	The student should **create** genetic map using crossir over percentages. **(F)**	**Genetic Mapping** How to draw a genetic map based crossing-over rates and determining g location	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
11	4 Hours (1Theory+3 3 Practical	The student should **classi** mutation types and **analy** their genetic effects. **(B, I**	**Genetic Mutation** Types of mutations (point mutations, deletions, insertion their causes, and th	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
12	4 Hours (1Theory+3 3 Practical	The student should **apply** Hardy-Weinberg's law to genetic populations. **(C)**	**Population Genet** – Genetic equilibri and the Hardy-Weinberg Law	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
13	4 Hours (1Theory+3 3 Practical	The student should **desig** breeding programs using mutations and selection. **(**	**Quantitative Genetics** – Polyge traits, genetic and environmental variation	Presentation, explanation, Q& interactive discussion, self-learning.	Written examination
14	4 Hours (1Theory+3 3 Practical	The student should **synthesize** knowledge to solve comprehensive gen problems. **(F, E)**	**Applications of Genetics in Genet Improvement and Animal Breeding** Selection, hybridization, and genetic improveme program	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports
15	4 Hours (1Theory+3 3 Practical		**General Review a Practical Exam** – Includes analysis c genetic problems, mapping, pedigree and multiple trait	Presentation, explanation, Q& interactive discussion, self-learning.	Oral, written and practica daily assessments and scienti reports

11.Course Evaluation

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

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	أسس الوراثة/ د.عبد الحميد عبدالله الهيتي
Electronic References, Websites	

Course Description Form

1. Course Name:
Dairy cattle production
2. Course Code:
ANP208
3. Semester / Year:
Second semester/2024-2025
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Presence + Electronic
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (2 hours theoretical + 3 hours practical) / 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Lect. Mohammed Ali Gharbi Email: mohammad.a.gharbi@ntu.edu.iq
8. Course Objectives
1. Providing students with theoretical knowledge about different breeds of dairy cattle and their economic and social importance. 2. Introducing students to the principles of animal production science related to dairy cattle management, as well as training students on proper feeding methods and ration management to improve productivity and milk quality. 3. Developing a comprehensive understanding of the milk production cycle from insemination to the dry season. 4. Enhancing students' abilities to apply genetic improvement techniques to select highly productive breeds. 5. Introducing students to the concepts of environmental management and appropriate housing to increase milk production. 6. Enabling students to evaluate the economic feasibility of dairy cattle production projects, analyze production costs and revenues, and introduce students to modern marketing methods for milk products and derivatives. 7. Teaching students how to implement sustainable practices in dairy cattle farming, ensuring the conservation of natural resources, and promoting the concept of animal

welfare at all stages of production.

8. Developing students' scientific research skills to contribute to solving problems facing the dairy cattle production sector.

9. Teaching and Learning Strategies

First: Teaching Strategies for Theoretical Lectures

1. Interactive Lecture:

• Present basic information while asking open-ended questions.

• Use brainstorming to stimulate critical thinking.

• Engage students in discussing field problems.

2. Multimedia Presentation:

• Use PowerPoint with images and videos on: automated milking, housing systems, and characteristics of dairy cows.

3. Problem-Based Learning:

• Present real-life problems from dairy farms.

• Assign students to analyze the problem and propose scientific solutions.

4. Cooperative Learning:

• Divide students into small groups.

• Each group studies a specific aspect (e.g., nutrition, housing, breeds) and presents it to the rest of the class.

Second: Teaching Strategies for the Practical Aspect

1. Demonstration and Practice:

• Practical demonstration in the field or barn.

2. Field Visits:

• To dairy farms or dairy farms.

• Linking theory to practice.

3. Project-Based Learning:

• Assigning students to develop a practical project, such as a feeding plan for a dairy herd or an economic feasibility study for a dairy farm.

4. Self- and Peer Assessment:

• Training students to evaluate their own and their peers' performance during practical exercises.

5. Video-Based Learning:

• Using educational videos to explain precise practical steps (such as artificial insemination, healthcare, manual or mechanical milking).

Third: Methods for Enhancing Learning

• Using an electronic platform (such as Google Classroom) to share lectures, videos, and tests.

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	Introduction and Introduction to Dairy Cattle	Introductory lecture and discussions about the curriculum	Homework
2	2 theoretical + 3 practical	Introduce students to dairy cattle	Classification and Breeds of Cattle	Presentation, explanation, questions and answers, discussion	Quiz Exam
3	2 theoretical + 3 practical	Understand the most important challenges facing livestock breeding	Challenges and Development of Cattle Production	Presentation, explanation, questions and answers, discussion	Report
4	2 theoretical + 3 practical	Breeding methods and producing high-yielding breeds	Reproductive Efficiency and Its Improvement in Cattle	Presentation, explanation, questions and answers, discussion	Quiz Exam
5	2 theoretical + 3 practical	Understand the structure and functions of the udder	Anatomy and Function of the Lactate Gland and Milk Production	Presentation, explanation, questions and answers, discussion	Oral Questions and Answers
6	2 theoretical + 3 practical	Explain the mechanism of milk	Hormonal Regulation and	Presentation, explanation,	Homework

		production	**Factors Affecting Milk Production**	**questions and answers, discussion**	
7	**2 theoretical + 3 practical**	**Knowledge of genetic improvement programs**	**The Role of Genetics in Improvement**	**Presentation, explanation, questions and answers, discussion**	**Homework**
8	**2 theoretical + 3 practical**	**Identify factors affecting milk production**	**Methods of Genetic Improvement in Cattle**	**Presentation, explanation, questions and answers, discussion**	**Quiz Exam**
9	**2 theoretical + 3 practical**	**Distinguish productive traits of breeds**	**The Difference Between Dairy and Beef Cattle**	**Presentation, explanation, questions and answers, discussion**	**Report**
10	**2 theoretical + 3 practical**	**Apply nutritional principles to dairy cattle**	**Feeding Cattle and Preparing Balanced Feeds**	**Presentation, explanation, questions and answers, discussion**	**Quiz Exam**
11	**2 theoretical + 3 practical**	**Understand methods for servicing dairy cows**	**Care for Pregnant Mothers and Their Newborns**	**Presentation, explanation, questions and answers, discussion**	**Oral Questions and Answers**
12	**2 theoretical + 3 practical**	**Master common milking methods and the factors surrounding them**	**Healthy and Clean Milk Production: Prevention of Pathogens and Spoilage**	**Presentation, explanation, questions and answers, discussion**	**Homework**
13	**2 theoretical + 3 practical**	**Identify diseases surrounding the animal and methods for preventing them**	**Cattle Health and Disease Prevention**	**Presentation, explanation, questions and answers, discussion**	**Quiz Exam**
14	**2 theoretical + 3 practical**	**Understand dairy farm management**	**Cattle Farm Management: Breeding, Care, and Marketing**	**Introductory lecture and discussions about the curriculum**	**Report**
15	**2 theoretical + 3 practical**	**Estimate the economic efficiency of production**	**Continued / Cattle Farm Management: Breeding, Care, and**	**Presentation, explanation, questions and**	**Quiz Exam**

			Marketing	**answers, discussion**	

11. Course Evaluation

Grade Distribution (out of 100) Based on Assigned Student Tasks:

Daily Quizzes = 10 marks
Projects = 10 marks
Midterm Practical Exam = 10 marks
Reports = 10 marks
Monthly Theoretical Tests = 10 marks
Final Practical Exam = 25 marks
Final Theoretical Exam = 25 marks

12. Learning and Teaching Resources

Required textbooks	**Livestock Breeding, Feeding and Care, Mohamed Khairy Mohamed Ibrahim**
Main references	**Dr. Faisal Al-Baraka (and Asst. Res. Amer Al-Haddadin). (2011). Guide to Dairy Cattle Rearing.** **Prof. Dr. Natiq Hameed Al-Qudsi & Jiyal Victor Elia. (2010). Dairy Cattle Production.**
Recommended books and references	**Dr. Mohammed Ali Makki Al-Rubaie. (2020). Dairy Cattle Production. University of Wasit, Iraq.** **Journal of Dairy Science ،Animal Production Science ،Animal Science Journa**
Electronic References, Websites	**https://www.fao.org/dairy-production-products/a0r/**

Course Description Form

1. Course Name:

Food Analysis

2. Course Code:

ANP207

3. Semester / Year:

Second / 2025

4. Description Preparation Date:

17/7/2025

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

75

7. Course administrator's name (mention all, if more than one name)

Name: Ahmed Abdul-Muhsin Qasim
Email: ahmed.qa@ntu.edu.iq

8. Course Objectives

Course Objectiv	1. To prepare students to work efficiently in the field of feed analysis and composition based on modern scientific approaches aligned with developments in advanced countries. 2. To enable students to enter the agricultural sector effectively by participating in governmental projects and the job market. 3. To guide students toward gaining better experience for postgraduate studies applications.

9. Teaching and Learning Strategies

Strategy

Definition: A set of knowledge, skills, and values that the course aims to develop in stude
Importance: Provides the learner with a clear understanding of what they will be able to do by end of the course and helps in course design and assessm
How they are determined: CLOs are defined based on the academic program objectives to wh the course belongs.

Learning Outcomes	Teaching & Learning Methods	Assessment Methods
Knowledge 1. Student explains the scientific	Theoretical explanation, illustrative examples,	Quizzes, oral, written, and practical daily exams,

principles of food analysis. 2. Student lists the basic components of food analysis. 3. Student explains the relationship between food analysis and production.	brainstorming, and video presentations.	scientific reports.
Skills 1. Apply steps of producing various food products according to quality standards. 2. Use laboratory tools and equipment safely and efficiently. 3. Analyze factors affecting the final food product quality. 4. Conduct preliminary sensory and chemical evaluation of certain food products.	Case studies, presentations, field visits, discussions, group activities, showcasing successful experiments.	Field reports, self-assessment, problem-solving and decision-making, presentations, oral tests.
Values 1. Commitment to professional safety and hygiene rules in the lab. 2. Show interest in reducing food waste and improving production efficiency. 3. Demonstrate honesty and integrity in preparing and evaluating food analyses.	Discussions, group activities.	Observation of practical behavior to assess teamwork, value-based self-evaluation, and professional conduct.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3+2	Understands the science of food analysis and its related terminology and structure.	Introduction to Food Analysis	Lecture, video presentation	Theory, oral, class questions, reports
Week 2	3+2	Explains general principles of food analysis, use of tools and techniques.	—	Lecture, video presentation	Theory, oral, class questions, reports
Week 3	3+2	Understands the importance of food analysis, and the factors	Importance of Food Analysis	Lecture, video presentation	Theory, oral, class questions, reports

		influencing method selection.			
Week 4	3+2	Applies analysis steps, interprets results, compares with standards, writes full report.	Protein Determination	Lecture, practical application, teamwork	Self-assessment, class questions
Week 5	3+2	Same as Week 4	Carbohydrate Determination	Lecture, practical application, teamwork	Self-assessment, class questions
Week 6	3+2	Same as Week 4	Crude Ash Determination	Lecture, practical application, teamwork	Self-assessment, class questions
Week 7	3+2	Same as Week 4	Fat Determination	Lecture, practical application, teamwork	Self-assessment, class questions
Week 8	—	Midterm Exam	—	—	—
Week 9	3+2	Student understands the digestive system of ruminants	Ruminant Digestive System	Lecture, video presentation	Theory, oral, class questions, reports
Week 10	3+2	Student understands digestion and absorption in ruminants	Digestion and Absorption in Ruminants	Lecture, video presentation	Theory, oral, class questions, reports
Week 11	3+2	Student learns about types of microorganisms in ruminants	Microorganisms in Ruminants	Lecture, video presentation	Theory, oral, class questions, reports
Week 12	3+2	Student understands types of nutritional balances	Nutritional Balances	Lecture, video presentation, practical application	Theory, oral, class questions, reports
Week 13	3+2	Student understands major gases in the rumen	Rumen Gases	Lecture, video presentation	Theory, oral, class questions, reports
Week 14	3+2	Same as Week 4	Mineral and Trace Element Determination	Lecture, video presentation	Theory, oral, class questions,

					reports
Week 15	—	Final Exam	—	—	—

11. Course Evaluation

Assessment Item	Frequency / Number	Weight (%)	Week
Quizzes	2	10%	Weeks 2 & 8
Lab Projects	1	10%	Weeks 6 & 12
Assignments	2	10%	Ongoing
Reports	1	10%	Week 13
Midterm Exam	2 hours	10%	Week 8
Final Exam	3 hours	50%	Week 15
Total Assessment	—	**100%**	—

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Available
Main references (sources)	*Artificial Intelligence Program*
Recommended books and references (scientific journals, reports…)	*Food Analysis – Basel Dalali*

Course Description Form

1. Course Name:
buffalo and camel production
2. Course Code:
ANP 205
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: Mohammed Waad Mohammed Email: mohammed.waad88@ntu.edu.iq
8. Course Objectives

Course Objectives	**A1- Commitment to ethical practices in managing buffalo production farms to ensure the quality of animal products.** **A2- Promoting the concept of sustainability by implementing strategies that reduce negative environmental impact.** **A3- Teamwork and cooperation in scientific research and practical applications within laboratories and farms.** **A4- Commitment to professional standards in managing buffalo and camel production projects.**

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	Definition of buffalo and camel	Interactive lecture	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	Explain the economic importance of buffalo and camels	Subheadings Defining the Problem Formulating Questions	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	Scientific and productive classification of buffalo and camel	Importance How Types and Evaluation of These Types	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
٤	5	Breed selection, herd size, purchase, and age grading	The student will be able to classify animals based on different species and breeds.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
٥	5	Feeding camels and buffaloes	The student will be able to identify the types of feeding.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Meat production from camels and buffaloes	Importance	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Milk production from camels and buffaloes	Importance	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	Methods of reproduction, anatomy of the reproductive system of camels and buffaloes, and hormonal control of the reproductive process	Types and Care Methods Training Education	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Pregnancy and childbirth	Types and Care Methods Training	Presentation, explanation,	Oral, written and daily practical

			Education	questions and answers, discussion	tests and scientific reports
10	5	Maternal and newborn care	Why study?	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	Animal transport and animal transport vehicles	Lecture, workshop	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	buffalo and camel pens	Lectures, practical software training, workshops	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	Marketing methods with an explanatory program for marketing types	Lectures, practical software training, workshops	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Growth and development in buffaloes and camels	Lectures, practical software training, workshops	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	Environment and Management	Environment and Management	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)	• Book on raising buffaloes and camels/Dr. Rady Khattab
Recommended books and references (scientific journals, reports…)	Book of(The course that camel surra runs in ponies,Buffaloes and other animals)/by H.E.Cross
Electronic References, Websites	Wekipedia.org buffalo and camel

Course Description Form

1. Course Name:
Northern Technical University/Agricultural Technical College
2. Course Code:
ANP204 Dairy Production Techniques
3. Semester / Year:
1/First semester/2024
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total)
65/2 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Maha A.M AL-Jawadi Email: maha.a.aljawadi@ntu.edu.iq
8. Course Objectives
Educating students about safe and effective dairy product manufacturing processes, including understanding packaging and storage processes. Enhancing students' understanding of the properties of milk and its derivatives and their impact on food quality and safety. Encouraging students to develop production, heat treatment, and sterilization skills in the dairy industry. Raising awareness of the importance of quality control and compliance with health standards in the industrial sector.
9. Teaching and Learning Strategies

Strateg	A- Knowledge A1 - The student will explain the components of milk and the effect of each component in the manufacture of dairy products. 2. The student will explain the various industrial processes (pasteurization, homogenization, fermentation, sterilization) in dairy production. 3. The student will identify the health and storage requirements required in dairy factories. B - Skills B1 - The student will apply the steps for producing various dairy products, such as milk, cheese, yogurt, and cream. 2. The student will use basic equipment and machinery in the dairy production unit efficiently and safely. 3. The student will conduct simple tests to assess the quality of milk and dairy products (sensory, physical, and chemical tests).

	C- Values A1. The student must adhere to occupational health and safety procedures within the dairy plant. 2. The student must demonstrate discipline and accuracy while working on the production lines. 3. The student must observe ethical and professional standards in dealing with colleagues and food products.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 Week 2 Week 3 Week 4 Week 5	1+3	Acquire knowledge and skills, and familiarize students with the science of food industries. Understand the chemical composition of milk fat and milk proteins. Explain milk sugar (lactose) and milk enzymes. Understand the mineral salts in milk and milk vitamins. Distinguish the microscopic components of milk and the physical	Definition of Dairy Production Science The importance of studying the nutritional and economic components of milk Chemical and physical classification of milk components Milk compounds and their relationship to the food industry Fatty acids Physical properties of milk fat The importance of casein and whey proteins The nutritional and economic importance of lactose Properties, benefits, and types of milk enzymes Introduction to the divisions and importance of milk minerals Salt balance	Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation,	Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical,

Week 6 Week 7 Week 8 Week 9 Week 10 Week 11 Week 12		properties of milk. Understand the viscosity of milk, skimmed milk, and microorganisms. Exam. Distinguish the classification of bacteria present in milk and diseases transmitted through milk. Understand the mechanism of milk spoilage by biology and technological processes. Understand filters and their types and homogenize milk. Understand and evaluate the thermal treatments applied to milk and milk products and the Pearce square. Two-semester exam. Explain and evaluate the	The importance of milk vitamins Color, taste, smell, and flavor Specific gravity and density of milk Boiling and freezing point of milk, osmotic pressure of milk Factors affecting milk viscosity Components of skimmed milk The importance of studying milk microorganisms and their sources Types of bacteria, typhoid fever Changes that occur in milk Microorganisms that cause spoilage of milk and milk products Heat treatments Factors affecting homogenization Factors that cause granule aggregation Fat Effect of homogenization on milk properties Cooling (tanks, surface coolers) Heat treatments (slow, rapid, and vacuum pasteurization) How to adjust fat percentages in milk and milk products using the	Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion Presentation, Explanation, Discussion	and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and scientific reports Oral, written, practical, and

Week 13 Week 14 Week 15		Pearce square. Explain and evaluate the Pearce square.	Pearson square		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)	Principles of dairy manufacturing
Main references (sources)	Principles of dairy manufacturing
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Fish environment and life	
2. Course Code:	
ANP 203	
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)	
75 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: harith nafi shuker Email: harithalmansour@ntu.edu.iq	
8. Course Objectives	
Course Objectives	**• The course focuses on understanding the interaction between fish and their aquatic environments, and its applications in sustainable management.** **• Understanding aquatic ecosystems** **• Classifying fish ecologically** **• Studying adaptive behaviors** **• Studying adaptive behaviors.**
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	To know the concept of the aquatic ecosystem	Aquatic ecosystem, life cycle in water	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student should learn about different aquatic environments such as rivers and lakes.	Different aquatic ecosystems, rivers, lakes, and the physical and chemical properties of water, temperature, light, pH, oxygen, salinity, turbidity, and nutrients.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student should be able to describe the body of a fish.	General description of the fish body and differences in the external shape of fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
٤	5	The student can distinguish the internal parts of the body.	Internal body parts of fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
٥	5	The student will be able to classify fish.	Fish classification	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Includes understanding and evaluating critical factors that determine fish survival and distribution,	Biological and non-biological factors affecting fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Enables the student to understand abiotic (physicochemical) and biological (organism relationships) factors.	Biological and non-biological factors affecting fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student should know the effect of turbidity on fish.	Biological and abiotic turbidity and its effect on fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student should know the types of aquatic plants.	Aquatic plants and their relationship with fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	The student learns the nature of fish nutrition.	Fish feeding and classification of fish according to their type of feeding	Presentation, explanation, questions and answers,	Oral, written and daily practical tests and scientific reports

				discussion	
11	5	The student learns the methods of reproduction.	Fish reproduction, different methods of fish reproduction according to their species	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student should learn about the types of fish migration.	Fish migration, types of fish migration and methods of studying it	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student should know the effect of pollution on fish.	Aquatic environment pollution and its impact on fish	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student should learn about fishing methods.	Fishing methods and means	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student will be able to identify the size of fish populations in the aquatic environment.	The size of fish populations in the aquatic environment and their relationship with fishing methods	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)	Sustainable Management of Fisheries Resources Khaled El Sayed
Main references (sources)	Egyptian Journal of Aquatic Research،Elsevier
Recommended books and references (scientific journals, reports…)	Egyptian Journal of Aquatic Research،Elsevier
Electronic References, Websites	**WorldFish Publications** worldfishcenter.org/publications

Course Description Form

1. Course Name:
Reproductive physiology
2. Course Code:
ANP 202
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 / 3
7. Course administrator's name (mention all, if more than one name)
Name: Mohammed Azeez Mohammed Email: mddazz84@ntu.edu.iq
8. Course Objectives

Course Objectives	1. **Provide students with fundamental knowledge of reproductive physiology in animals** 2. **Teach modern techniques for diagnosing and monitoring reproductive functions** 3. **Examine the impact of environmental and nutritional factors on reproductive efficiency** 4. **Apply assisted reproductive technologies (ART) such as AI and embryo transfer.**
9. Teaching and Learning Strategies	
Strategy	Course Outcomes **1. Blended Learning** Combine **interactive lectures** (hormonal pathways, reproductive cycles) **2. Hands-On Skill Development (Lab sessions)**: Semen collection/evaluation (CASA systems). **3. Problem-Based Learning (PBL)** Design solutions using **synchronization protocols** or ART

	4. Industry Integration (**Field visits)**: AI centers, embryo labs, or genetic research facilities.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Explain the structural and functional components of the male and female reproductive systems in domestic animals.	Physiological Principles of the Male and Female Reproductive Systems	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	Describe the endocrine control mechanisms governing reproductive functions.	Neural and Hormonal Control of Reproductive Function	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	Analyze the hormonal regulation of the estrous cycle and ovulation.	Role of the Pituitary Gland in Regulating Animal Reproduction	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	Interpret the physiological processes involved in spermatogenesis and oogenesis.	Sex Hormones: Mechanisms and Physiological Impacts	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	Evaluate the mechanisms of fertilization and early embryonic development..	Estrous Cycle in Females: Stages and Hormonal Regulation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Assess the role and function of the corpus luteum during pregnancy..	Ovulation: Mechanisms and Regulatory Factors	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Illustrate the physiological changes during gestation, parturition, and puerperium.	Cellular Physiology of the Testes and Spermatogenesis	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	Identify common reproductive disorders and explain their physiological basis..	Fertilization and Gamete Interaction Dynamics	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Apply knowledge of reproductive physiology to clinical case scenarios related to infertility.	Hormonal Physiology of Pregnancy and Corpus Luteum Formation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Examine the impact of stress, nutrition, and environmental factors on reproductive health	Physiological Changes During Gestation and Parturition	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11	5	Discuss the immunophysiological aspects of reproduction, including maternal-fetal tolerance	Infertility in Males and Females: Physiological Causes and Therapeutic Applications	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	Interpret diagnostic data related to reproductive hormone levels and organ function.	Reproductive Immunophysiology and Maternal Immune Adaptation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	Critically appraise the use of assisted reproductive technologies in veterinary practice.	Environmental and Stress Factors Affecting Reproductive Function	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Formulate reproductive management strategies to improve herd fertility.	Applications of Reproductive Physiology in Veterinary Biotechnology	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	Integrate theoretical knowledge with practical skills to assess and manage reproductive health in animals.	Research Frontiers in Reproductive Physiology: From Cells to Clinical Practice	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 a	
Main references (sources)	*Geoffrey H. Arthur, David E. Noakes, Harold Pearson, and Gary C.W. England*
Recommended books and references (scientific journals, reports…)	**Veterinary Reproduction and Obstetrics**
Electronic References, Websites	https://www.elsevier.com/books/veterinary-reproduction-and-obstetrics/england/978-0-7020-7233-8 https://www.wiley.com/en-us/Fertility+and+Obstetrics+in+the+Horse%252C+3rd+Edition-p-9780470655719 http://www.fao.org/3/a-i0116e.pdf

Course Description Form Ruminants physiology

1. Course Name:
Ruminants physiology
2. Course Code:
ANP 201
3. Semester / Year:
yearly
4. Description Preparation Date:
٢٠٢٥/٦/٣
5. Available Attendance Forms:
Weekly attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours
7. Course administrator's name (mention all, if more than one name)
Name: As. Pr. Dr. Azhar Majid Ibrahim Email: dr.azharm@ntu.edu.iq

8. Course Objectives

Course Objectives The cognitive objectives for the rumina physiology lesson focus on enabling students to understand vital functions of ruminant in a scientific and systematic mann Here are the most important cognitive objectives, systematic classified according to cognitive levels	• **Knowledge**..... • **Comprehension**..... • **Application**.....

9. Teaching and Learning Strategies

Strategy	The subject takes into account the nature of the subject as an ap scientific subject, combining theoretical and practical aspects, us combination of strategies that develop deep understanding, applied and analytical thinking among students

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			The concept	Lectures	exam

١	٥	Understanding basic biologi processes	physiology	& esentatio n	
٢	٥	General explanation endocrine glands a their vital functions	physiology of endocrine glands and hormones	Questions, swers and discussion	Report Writin
3	5	Analysis of t relationship betwe hormones and t functions of the tar organs	ysiology of endocrine glands and hormones	Interactive lecture	Short test
4	5	Explanation of t functional structure the heart and blo vessels	e cardiovascular system	teractive lecture	Short test
5	5	Interpretation blood pressure a blood functions	The diovascula r system	Lecture, practical training	Submit a repor
6	5	Explanation of t vulnerable compositi of the respiratory syste	ysiology of the respiratory system	Interactive ture, collective discussions	Short test
7	5	Gases exchan mechanism	ysiology of the respiratory system	Interactive lecture	bmit a repor , short test
8	5	Explanation of the ma vulgar functions for t parts of the digest system	physiology of the digestive system	Interactive ture, anatomy the digestive system	Short test
9	5	Definition of vomti rumination and sal production	physiology of the digestive system	Lecture, practical training	Short test
0	5	Functions of the nervo system and its divisions	Physiology of the nervous system	Lecture, group scussions	it a repor , short test
1	5	Explanation of ner	Physiology of the	Lecture,	Write a repor

		reflexes and reactions	nervous system	group cussions	
2	5	Knowing a understanding t physiological structure the male reproducti system	Physiology of the ale reproductive system	ase study	short test
3	5	Explanation of t artificial inseminati process	Physiology of the ale reproductive system	teractive lecture	Submit a searc
4	5	Knowing a understanding t physiological structure the female reproducti system	Physiology of the female reproductive system	teractive lecture	short test
5	5	Explanation of t ovulation cycle	Physiology of the female reproductive system	Practical training	short test

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Animal physiology for dr. dyaa l-ha
Main references (sources)	Animal physiology for dr. dyaa l-ha
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Northern Technical University/Agricultural Technical College
2. Course Code:
TAMO252 Food Industries
3. Semester / Year:
1/First semester/2024
4. Description Preparation Date:
2025/7/17
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total)
65/2 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Maha A.M AL-Jawadi Email: maha.a.aljawadi@ntu.edu.iq
8. Course Objectives
Understanding the Fundamentals of Food Manufacturing **Enables students to understand the basic principles of food science and various manufacturing techniques.** **2. Identify Food Raw Materials** **Understand the characteristics and quality of raw materials used in the food industry, and how to select and process them.** **3. Understand Preservation and Storage Methods** **Understand the various methods of food preservation, such as sterilization, drying, refrigeration, and freezing, and their impact on product quality and safety.** **4. Apply Food Safety Principles** **Awareness of Good Manufacturing Practices (GMP) and Hazard Analysis and Critical Control Points (HACCP) principles to ensure food safety.** **5. Acquire Equipment Operation Skills** **Train students to use and operate food manufacturing equipment and machinery safely and efficiently.** **6. Analyze Food Product Quality**

Develop the ability to conduct physical, chemical, and microbial tests to assess the quality of food products.

7. Learn About Different Food Industries

Familiarity with basic food manufacturing processes, such as dairy products, canned goods, juices, baked goods, and oils.

8. Promoting scientific thinking and innovation

Encouraging students to think critically and innovatively in developing new food products that meet market needs.

9. Teaching and Learning Strategies

Strategy	A- Knowledge A1 - The student will explain the scientific principles of food industries and food preservation methods. 2. The student will list the basic components of food and the effects of industrial processing on them. 3. The student will explain the relationship between food properties and appropriate manufacturing techniques. B - Skills B1. Apply the manufacturing steps for various food products according to quality standards. 2. Use industrial tools and equipment in a safe and effective manner. 3. Analyze the factors affecting the quality of the final food product. 4. Conduct a preliminary sensory and chemical evaluation of selected food products. C- Values A1. Adhere to occupational safety and hygiene regulations in the manufacturing environment. 2. Demonstrate a commitment to reducing food waste and improving production efficiency. 3. Demonstrate integrity and honesty in preparing and evaluating food products.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	1+3	Knowledge of Food Science Understanding the main food industries and	Definition of Dairy Production Science Factors that Facilitate Interest and	Presentation, Explanation, Discussion Presentation, Explanation,	Oral, written, practical, and scientific reports Oral, written, practical, and

		the methods used to establish a new industry	Development in the Food Industry	Discussion	scientific reports
Week 2		Knowledge of food components	Main Objectives of Food Preservation and Processing	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 3		Explanation of lipids and vitamins	Factors to Consider When Selecting a Region or Location for Establishing a Food Processing Plant	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 4		Understanding of the main nutrients and the importance of fats in meat	Classification of Food Components	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 5		Dyes, enzymes, and flavoring agents	The Importance of Water to the Human Body	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 6		Eggs	Types of Water in Food: Carbohydrates and Proteins	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 7		Semester Exam	Definition of Lipids	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 8		Distinguishing some types of dietary oils and fats	Benefits of Lipids, Classification of Lipids, Classification of Fatty Acids, Vitamins, Minerals, Organic Acids	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 9		Grains	Types of Muscles in Meat	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
Week 10		Food preservation methods Freezing Heat preservation	The Rigor of Putrefaction Phenomenon	Presentation, Explanation, Discussion	Oral, written, practical, and scientific reports
		Light boiling	The Difference Between White and Red Meat and Fish Meat		Oral, written, practical, and scientific reports
Week		Second Semester Exam	Characteristics		

11 Week 12 Week 13 Week 14 Week 15		Explanation of cans and their manufacture Identification and evaluation of tests performed on canned goods.	of Enzymes in Food Processing, Oxidants and Antioxidants, Allergenic Compounds Egg Proteins Steps for Freezing Eggs Distinguishing Between Fresh and Stored Eggs, The Role of Eggs and Egg Products in the Food Industry Types of Rancidity Spoilage of Oils and Fats Characteristics of Fats Components of Grains Main Types of Wheat, Milling Process, Tests Conducted on Flour to Determine Its Sustainability On bread Basic requirements for cold storage Changes that occur in food during cold storage Canning stages Peeling methods Benefits of canning medium Emptying methods		Oral, written, practical, and scientific reports

			Benefits of coating materials for cans, types of cans Detecting contamination in canned goods, the most important preservatives		

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 food industries
Main references (sources)	Principles of food industries
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Agricultural Statistics
2. Course Code:
ANP202
3. Semester / Year:
autumn
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
In-person attendance in the classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
٦٠
7. Course administrator's name (mention all, if more than one name)
Name: Doaa Qasim Sabri Email: dqasm0478@ntu.edu.iq
8. Course Objectives

Course Objectives	To equip students with the essential knowledge and skills in applying statistical methods to agricultural data, thereby enhancing the quality of analysis and decision-making across various agricultural fields." According to the curriculum description for the course "Agricultural Biostatistics" (Course Code: 613 Qasr), offered by the Department of Agricultural Economics, College of Science, King Saud University, the general objectives of the course are as follows: 1. **Understanding statistical concepts and terminology:** Study fundamental concepts and terms related to statistics, establishing a strong foundational knowledge base for students in this field. 2. **Analyzing relationships among variables:** Explore different types of relationships between variables—such as correlation and simple linear regression—to understand how variables affect one another.

	3. **Designing regression models:** Learn how to construct simple and multiple linear regression models to study the relationship between a dependent variable and a set of independent variables, and interpret the statistical significance of the coefficients. 4. **Addressing regression issues:** Gain the ability to identify practical regression problems and apply remedies to ensure the accuracy of results. 5. **Using general linear models:** Become familiar with general linear models—such as analysis of variance (ANOVA) and analysis of covariance (ANCOVA)—and apply them in agricultural studies. 6. **Exploring advanced regression models:** Study certain types of advanced regression models—such as logistic regression and Poisson regression—and apply them to the analysis of agricultural data.

9. Teaching and Learning Strategies

Strategy	**1. Active Learning & Problem-Based Learning** • **Focus on hands-on exercises using real agricultural datasets (e.g. crop yields, rainfall, fertilizer use) to apply statistical methods like regression, ANOVA, and time-series forecasting** • **Organize problem-based scenarios (e.g. "Why did crop yield drop in Region X?") to guide students through hypothesis formulation, analysis, and interpretation .** **2. Cooperative Learning & Peer Teaching** • **Use small-group projects, where students collaboratively explore questions like fertilizer vs. yield impact, present their findings, and rotate between roles .** • **Encourage peer-teaching sessions where students explain concepts and software analyses to each other, reinforcing understanding.** **3. Retrieval Practice & Frequent Low-Stakes Quizzes** • **Implement short weekly quizzes on key concepts (e.g. interpreting regression coefficients, diagnosing multicollinearity), building long-term retention through the testing effect** • **Have students self-test by generating their own questions or using**

flashcards for statistical terms and formulae.

4. Structured Note-Taking & Learning Reflection

- **Teach the Cornell note-taking system: divide notes into keywords/questions, detailed notes, and summary sections to enhance later review.**
- **Use KWL charts ("What I Know," "What I Want to Learn," "What I Learned") at the start and end of modules to track progress and tailor learning paths .**

10. Course Structure

Week	Hours (Theory + Practical)	Unit / Topic Name	Required Learning Outcomes	Teaching Method	Assessment Method
1	1 theory + 2 practical	Definition of statistics, its importance, historical overview, statistical symbols	Understand the concept of statistics and its importance in agriculture; recognize statistical symbols	Theoretical lectures; explanation of symbols during lectures	Essay questions and practical exercises
2	1 theory + 2 practical	Presentation, tables, charts, statistical data, grouped and ungrouped data, frequency, classes	Ability to represent data using tables and charts; distinguish between grouped and ungrouped data	Practical exercises using statistical software	Performance assessment in preparing tables and charts; presentations
3	1 theory + 2 practical	Measures of central tendency for grouped and ungrouped data	Calculate and interpret measures of central tendency	Problem-solving exercises	Written tests
4	1 theory + 2 practical	Measures of dispersion and variation for grouped and ungrouped data	Understand and apply measures of dispersion	Applied lessons	Performance assessment in calculating dispersion measures
5	1 theory + 2 practical	Probability and distributions	Understand the concept of probability and data distributions	Interactive lectures	Theoretical and practical questions
6	1 theory + 2 practical	Binomial distribution	Distinguish between distributions and their uses	Case studies and practical examples	Evaluative tests
7	1 theory + 2 practical	Normal distribution	Distinguish between distributions and their uses	Case studies and practical examples	Evaluative tests
8	1 theory + 2 practical	First mid-term exam	Comprehensive assessment of knowledge and skills acquired in the first half of the semester	Comprehensive review; mock exams	Written exam covering previous topics
9	1 theory + 2 practical	Sampling theory and point & interval estimation	Apply sampling and estimation techniques	Lectures, case studies, discussions	Short tests; analytical reports
10	1 theory + 2 practical	Hypothesis testing	Conduct hypothesis tests and interpret results	Analysis of real data	Accuracy evaluation of tests
11	1 theory + 2 practical	t-test / t-distribution	Perform t-tests and interpret results	Applied exercises	Practical tests; analytical reports
12	1 theory + 2 practical	Chi-square distribution	Perform chi-square tests and interpret results	Applied exercises	Practical tests; analytical reports
13	1 theory + 2	F-test / F-	Perform F-tests and	Applied exercises	Practical tests;

	practical	distribution	interpret results		analytical reports
14	1 theory + 2 practical	Correlation	Analyze relationships between variables using correlation	Statistical software usage	Practical tests; analytical reports
15	1 theory + 2 practical	Regression	Analyze relationships between variables using regression	Statistical software usage	Practical projects

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)	Available
Main references (sources)	**Dr. Khasha Mahmoud Al-Rawi 1980 Introduction to Statistics**
Recommended books and references (scientific journals, reports…)	**R. Rangaswamy – A Textbook of Agricultural Statistics (2020)**
Electronic References, Websites	https://www.youtube.com/watch?v=lIrRmAmU6p0&t=31s

Course Description Form

1. Course Name:
Summer Cereal and Legume Crops
2. Course Code:
TAMO 201
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)
60 / 5
7. Course administrator's name (mention all, if more than one name)
Name:Dr. Shihhab ahmed Email:
8. Course Objectives

Course Objectives	At the end of the course, the student is expected to be able to: - **Identify summer field crops** - **Understand the importance of summer cereal crops** - **Differentiate between cereal and legume crops** - **Understand crop management methods** - **Know the types of fertilizers and methods of their application**

9. Teaching and Learning Strategies

Strategy	- Discussion-based learning - Brainstorming - Asking questions and trying to answer them through cooperation Self-learning.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Recognize the importance and history of organic chemistry. Differentiate between ionic and covalent bonds. Explain the concept of hybridization (sp3, sp2, sp) and draw simple molecular shapes	Introduction to Organic Chemistry and Chemical Bonding (Ionic and Covalent Bonds, sp3 Hybridization).	Lecture, presentation, illustrations	Short answer questions on specific topics
2	5	Name alkanes and cycloalkanes using IUPAC rules. Relate the molecular structure of alkanes to their physical properties (e.g., boiling point	Alkanes and Cycloalkanes: IUPAC Nomenclature and Physical Properties	Lecture, presentation, illustrations	Questions and answers
3	5	Draw Newman projections to illustrate different	Conformations of Alkanes and Cycloalkanes	Lecture, presentation,	Questions and answers

		conformations. Analyze the stability of different cycloalkane conformations (chair and boat	(Newman Projections, Chair and Boat Conformations).	illustrations	
4	5	Name alkenes and alkynes and determine the degree of unsaturation. Describe the double and triple bonds in terms of hybridization (sp2, sp)	Alkenes and Alkynes: Structure, Nomenclature, and Physical Properties	Lecture, presentation, illustrations	Questions and answers
5	5	Explain the mechanism of an electrophilic addition reaction. Apply Markovnikov's rule to predict the major product of a reaction	Electrophilic Addition Reactions of Alkenes and Alkynes (Markovnikov's Rule)	Lecture, presentation, illustrations	Questions and answers + exercise solutions
6	5	Identify chiral centers in a molecule. Distinguish between enantiomers and diastereomers. Assign the absolute configuration (R/S)	Stereochemistry: Chirality, Enantiomers, and Assigning Configuration (R/S)	Lecture, presentation, illustrations	Questions and answers

		to a chiral center			
7	5	Classify alkyl halides as primary, secondary, or tertiary. Name alkyl halides according to the IUPAC system	lkyl Halides: Classification, Nomenclature, and Physical Properties	Lecture, presentation, illustrations	Questions and answers
8	5	Compare the SN1 and SN2 mechanisms. Identify the factors that favor one mechanism over the other (nature of the alkyl halide, nucleophile, solvent	Nucleophilic Substitution Reactions (SN1 & SN2): Mechanisms and Influencing Factors	Lecture, presentation, illustrations	Questions and answers
9	5	Compare the E1 and E2 mechanisms. Apply Zaitsev's rule to predict the most stable elimination product	Elimination Reactions (E1 & E2): Mechanisms and Zaitsev's Rule	Lecture, presentation, illustrations	Questions and answers + exercise solutions
10	5	Name and classify alcohols and ethers. Explain the effect of hydrogen bonding on the physical properties of alcohols	Alcohols and Ethers: Nomenclature, Properties, and Preparation Methods	Lecture, presentation, illustrations	Questions and answers + exercise solutions

11	5	Describe the oxidation reactions of alcohols. Explain the reaction for converting alcohols to alkyl halides	Reactions of Alcohols and Ethers	Lecture, presentation, illustrations	Questions and answers + exercise solutions
12	5	Define the concept of aromaticity and apply Hückel's rule. Name monosubstituted and disubstituted benzene derivatives	Aromatic Compounds: The Concept of Aromaticity, Nomenclature of Benzene Derivatives	Lecture, presentation, illustrations	Questions and answers
13	5	Explain the general mechanism of an EAS reaction. Predict the products of nitration, halogenation, and sulfonation of benzene	Electrophilic Aromatic Substitution (EAS): Nitration, Halogenation, Sulfonation	Lecture, presentation, illustrations	Questions and answers
14	5	Name aldehydes and ketones. Explain the mechanism of nucleophilic addition to the	Aldehydes and Ketones: Structure, Nomenclature, and Nucleophilic Addition Reactions	Lecture, presentation, illustrations	Questions and answers

		carbonyl group			
15	5	Explain the reason for the acidity of carboxylic acids. Recognize the basic reactions of carboxylic acids, such as ester formation	Carboxylic Acids and Their Derivatives: Acidic Properties and Reactions	Lecture, presentation, illustrations	Questions and answers

11. Course Evaluation

- **Continuous Assessment**: Regular quizzes, field reports, and participation in practice al sessions
- **Final Examination:** Written exam assessing both theoretical understanding and the application of practices

Final Project: A comprehensive project where students design a conservation agriculture plan based on a case study

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Required Textbooks (Curriculum books, if any(**
Recommended books and references (scientific journals, reports…)	**Google Scholar, Scientific Researcher Portal**
Electronic References, Websites	**All sites that provide accredited sources and also artificial intelligence tools**

Course Description Form

1. Course name:	
Professional ethics	
2. Course code:	
NTU204	
3. the chapter Academic/ year	
First semester	
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:Dr. Ahmed Fares Al-Sawaf e-mail: ahmedalsawaf@ntu.edu.iq	
8. Course objectives	
1. Introducing students to the concepts of occupational safety and health and their importance in protecting people, property, and the environment.. 2. Identify the types of hazards (electrical, mechanical, chemical, physical, biological, etc.) and ways to prevent them.. Providing students with knowledge of local and international regulations and laws related to occupational safety and health..	**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 outcomes	watches	week
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Ethics and Law	theoretical: The student should be able to define ethics and law.	2 theoretical	the firs
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Ethics and moral analysis	theoretical: The student should be able to define ethics and ethical analysis.	2 theoretical	the second
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Ethics and professions	theoretical: The student should be able to defineEthics and professions	2 theoretical	the thi

Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Anonymity, security, privacy, and civil liberties	theoretical: The student should be able to identify privacy and civil liberties.	2 theoretical	Fourth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Intellectual Property Rights and Computer Technology	theoretical: The student should be able to identify intellectual property rights and computer technology.	2 theoretical	Fifth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: The concept of cybercrime and the corresponding Iraqi law	theoretical: The student should be able to defineThe concept of cybercrime and Iraqi law	2 theoretical	Sixth
Short exams,	theoretical:Auditory methods: writing on	theoretical: Types of attacks on computer systems	theoretical: The student should be able to identify types	2 theoretical	Sevent

homework assignments, discussions	the board method, direct dialogue method		of attacks on computer systems.		
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: exam	theoretical: exam	2 theoretical	The eighth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Motives of computer crimes	theoretical: The student should be able to identify the motives behind computer crimes.	2 theoretical	Ninth
Short exams, homework assign	theoretical:Auditory methods: writing on the board method, direct	theoretical: Social costs and consequences	theoretical: The student should be able to identify the social costs and consequences.	2 theoretical	tenth

ments, discuss ions	dialogue method				
Short exams, homew ork assign ments, discuss ions	theoretical:A uditory methods: writing on the board method, direct dialogue method practical:As signment and report	theoretical: Computer Crime Prevention Strategies	theoretical: The student should be able to understand computer crime prevention strategies.	2 theoreti cal 3 practic	eleven th
Short exams, homew ork assign ments, discuss ions	theoretical:A uditory methods: writing on the board method, direct dialogue method	theoretical: Iraqi Cybercrime Law	theoretical: The student should be able to defineElectroni c Crimes Law	2 theoreti cal 3 practic	twelfth
Short exams, homew ork assign ments, discuss	theoretical:A uditory methods: writing on the board method, direct dialogue method	theoretical: The concept of cybercrime and the corresponding Iraqi law	theoretical: The student should be able to define The concept of cybercrime and the corresponding Iraqi law	2 theoreti cal	thirtee nth

ions					
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical: Social costs and consequences	theoretical: The student should be able to define Social costs and consequences	2 theoretical	fourteenth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method	theoretical:Motives of computer crimes	theoretical: The student should be able to define Motives of computer crimes	2 theoretical	fifteent

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 textbooks (curriculum books, if available)
	Main References (Sources)

	Recommended books and references (scientific journals, reports...)
	Electronic references and websites

Course Description Form

1. Course name:	
Baath regime crimes in Iraq	
2. Course code:	
NTU203	
3. the chapterAcademic/ year	
First semester	
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)	
30Hour (2 theoretical) * 15 weeks	
7. Course Supervisor Name (List all names, if there is more than one)	
the name:Dr. Ahmed Faris Al-Sawaf e-mail: ahmedalsawaf@ntu.edu.iq	
8. Course objectives	
1. The student must be able to understand and comprehend.theBasic concepts related to the definition of crimes, their types and divisions. 2. The student must be able to:Defining the crimes and violations of the former regime and the types of international crimes 3. The student must be able to:Defining mass grave crimes and violations of Iraqi laws 4. The student must be able to:Addressing environmental crimes, the destruction of cities, demographic change policies, and extrajudicial detention.	**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 outcomes	watches	week
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Crimes of the Ba'ath regime according to the Iraqi High Criminal Court Law of 2005 - The concept of crimes and their types - Definition of crime in language and terminology	theoretical: The student should be familiar with the concept of crimes and their types.	2 theoretical	the firs
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Crime sections - Crimes of the Ba'ath regime as documented by the Iraqi Supreme Criminal Court Law of 2005	theoretical: The student should be able to identify the crimes of the Baath regime according to the Criminal Court.	2 theoretical	the second
Short exams, homework assign	theoretical :Auditory methods: writing on the board method, direct dialogue	theoretical: - Types of international crimes - DecisionsIssuedFrom the Supreme Criminal Court	theoretical: The student should be able to identify the types of international crimes.	2 theoretical	the thi

ments, discussions	method				
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Psychological and social crimes and their effects. - Psychological crimes - Mechanisms of psychological crimes Psychological effects of crimes	theoretical: The student should be able to distinguish between psychological and social crimes.	2 theoretical	Fourth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Social crimes - Militarization of society The Baath regime's position on religion	theoretical: The student should be able to identify social crimes and the Baath regime's position on religion.	2 theoretical	Fifth
Short exams, homework assignments,	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Violations of Iraqi laws Images of human rights violations and crimes of power	theoretical: The student should be able to identify violations of Iraqi laws and their forms.	2 theoretical	Sixth

discussions					
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: Some decisions on the political and military violations of the Baath regime	theoretical: The student should be able to identify political and military violations.	2 theoretical	Sevent
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: Baath regime prisons and detention centers	theoretical: The student should be able to identify prison and detention centers.	2 theoretical	The eighth
Short exams, homework assignments, discuss	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: Environmental crimes of the systemResurrection In Iraq	theoretical: The student should be able to identify the environmental crimes of the Baath regime.	2 theoretical	Ninth

ions					
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: War pollution, radioactivity, and mine explosions	theoretical: The student should be able to understand war pollution and mine explosions.	2 theoretical	tenth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: – Destruction of cities and villages scorched earth policy	theoretical: The student should be able to identify the scorched earth policy.	2 theoretical	eleventh
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: – draining the marshes Bulldozing palm groves, trees and crops	theoretical: The student should be able to identify how to clear palm groves.	2 theoretical	twelfth

Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: - Mass grave crimes - theTMass graves corporal	theoretical: The student should be able to identify mass graves.	2 theoretical	thirteenth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: Mass graves and genocide committed by the Baath regime	theoretical: The student should be able to identify the mass graves committed by the Baath regime.	2 theoretical	fourteenth
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method	theoretical: Chronological classification of genocide graves in Iraq	My theory: The student should be able to chronologically classify genocide graves.	2 theoretical	fifteent
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 textbooks (curriculum books, if available)
Private publicationsCrimes and Penal Codeand available human rightsinCollege Library and University Central Library	**Main References (Sources)**
	Recommended books and references (scientific journals, reports...)
Human rights websites.	**Electronic references and websites**

Course Description Form

1. Course name:	
Computer Principles (2)	
2. Course code:	
NTU201	
3. the chapterAcademic/ year	
First semester	
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)	
30Hour (1 theoretical + 1 practical) * 15 weeks	
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	
1. The student must be able to:Introduction to the Calculator - Generations of the Calculator - Hardware and Software Components 2. The student should be able to identifyWith the most important basic information about computers, computer generations, and operating systems. 3. The student should be able to know:Operating 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. 2. Brainstorming. 3. Practical training. 4. Dialogue and discussion. 5. Assign tasks and report. 6. Assign teamwork to reveal leadership skills.	**Strategy**
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 computer Basic Concepts in Information Technology computer system information technology Types of computers computer parts Input and output units memory CPU	The importance of computers in our daily and economic lives Knowledge of information technology and learning the parts and units of a computer	1 theoretical 1 practic	the firs
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Equipment Computer and logic units Recorders control unit Input unit units of tax Memory, Storage, and Performance Main memory types	Learn about computer hardware and memory types	1 theoretical 1 practic	the second
Short exams, homework assignments,	theoretical:Auditory methods: writing on the board method, direct dialogue method	Data representation in memory Memory unit Secondary memory and its types storing data in memory Computer performance Software	Learn how to represent data, what units of measurement are, learn about software and translators, and learn about types of operating	1 theoretical 1 practic	the thi

discussions	practical:Assignment and report	Systems software (programming languages) Translations, Interpreters, Operating Systems Types of operating systems Application software	systems.		
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Theoretical exam (1)	Exam on the subject	1 theoretical 1 practic	Fourth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Windows (windows) Use the mouse, minimize and maximize windows, close windows	Getting to know Windows	1 theoretical 1 practic	Fifth
Short exams,	theoretical:Auditory methods:	Move windows from one place to another, control	Learn about moving windows and	1 theoretical	Sixth

homework assignments, discussions	writing on the board method, direct dialogue method practical:Assignment and report	window size, taskbar, date and time	how to control them.	1 practic	
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Start keyStart Menu Programs Programs My documentsMy Document	Learn about the main Windows icons	1 theoretical 1 practic	Sevent
Short exams, homework assignments, discussions	theoretical :Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Desktop Create a shortcut icon for an application or file Recycle Bin Windows Explorer Formatting floppy disks	Learn about non-essential shortcut icons	1 theoretical 1 practic	The eighth
Short exams,	theoretical :Auditory methods:	File arrangement Select, select folder, create	Identify the operations performed on	1 theoretical	Ninth

homework assignments, discussions	writing on the board method, direct dialogue method practical:Assignment and report	folder, rename, delete file, copy file, move file	the file	1 practic	
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Screen settings Stop screen Change mouse pointer Mouse speed control Double-click speed control	Screen and mouse settings explained	1 theoretical 1 practic	tenth
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Software Installation and Uninstallation Disk Information, Request Help	Knowing how to install and remove programs from your hard drive	1 theoretical 1 practic	eleventh
Short exams,	theoretical:Auditory methods:	Monthly exam (2)	Exam on the subject	1 theoretical	twelfth

homework assignments, discussions	writing on the board method, direct dialogue method practical:Assignment and report			1 practic	
Short exams, homework assignments, discussions	theoretical:Auditory methods: writing on the board method, direct dialogue method practical:Assignment and report	Calculator / Notebook / Notebook / Use the notebook to edit and create the file Painter / Screen Components	Knowledge and practical application	1 theoretical 1 practic	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 player	Learn how to create and manage graphics.	1 theoretical 1 practic	fourteenth
Short	theoretical:Auditory	Viruses / Reason for the name / Definition /	Learn about types of viruses	1 theoretical	fifteent

exams, homework assignments, discussions	methods: writing on the board method, direct dialogue method practical:Assignment and report	Methods of virus spread / Symptoms of virus infection / Methods of protection / Types of viruses Computer crimes / Theft / Hackers	and ways to protect against them	1 practic	

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	
Metzeelaer and Scharpf/Benjamin/Cummings Pub. 1995	**Required textbooks (curriculum books, if available)**
Library, scientific websites on the Internet, viewing lectures from other universities	**Main References (Sources)**
Internet	**Recommended books and references (scientific journals, reports...)**
	Electronic references and websites

Course Description Form

1. Course name:	
English language (2)	
2. Course code:	
NTU200	
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)	
30Hour (2 theoretical) * 15 weeks	
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 outcomes	watches	week
Short exams, homework assignments, discussions	Discussion method, lecture method	**Speech parts, sentences in English, comprehension**	Parts of speech, sentence and phrase in English, comprehension	2 theoretic	the first the second
Short exams, homework assignments, discussions	Discussion method, lecture method	**Proper, common, material, collective, abstract, countable and uncountable nouns, a, an, the.**	The student should be able to recognize proper nouns, indefinite nouns, material nouns, plural nouns, moral nouns, countable and uncountable nouns, definite and indefinite articles.	2 theoretic	the third
Short exams, homework assignments, discuss	Discussion method, lecture method	**Pronouns: types, personal (subject, objective), possessive, reflexive, demonstrative, interrogative, and relative pronouns.**	The student should be able to identify pronouns and their types: personal, accusative, genitive, possessive, reflexive, demonstrative, relative	2 theoretic	Fourth + Fifth

ions			pronouns, and interrogative pronouns.		
Short exams, homework assignments, discussions	Discussion method, lecture method	**Auxiliary verbs, types**	The student should be able to identify auxiliary verbs and their types.	2 theoretic	Sixth
Short exams, homework assignments, discussions	Discussion method, lecture method	**Tenses in active voice case: simple tense: present, past, future**	The student should be able to identify the tenses in the active voice: simple tense: present, past, future.	2 theoretic	Seventh
Short exams,	Discussion method, lecture method	**Continuous tense: present, past, future**	The student should be able to know the continuous	2 theoretic	The eighth

homework assignments, discussions			tense: present, past, and future.		
Short exams, homework assignments, discussions	Discussion method, lecture method	**Perfect tense: present, past, future**	The student should be able to know the perfect tense: present, past, and continuous.	2 theoretic	Ninth
Short exams, homework assignments, discussions	Discussion method, lecture method	**Continuous perfect tense: present, past, future**	The student should be able to know Perfect Continuous Tense: Present, Past, Future	2 theoretic	tenth

Short exams, homework assignments, discussions	Discussion method, lecture method	**Adjectives: names, possessive, descriptive, long, and short adjective. Comparison and similarity**	The student should be able to know Adjectives: proper nouns, possessive adjectives, descriptive adjectives, long adjectives, short adjectives, comparative adjectives and similes	2 theoretic	eleventh + twelfth
Short exams, homework assignments, discussions	Discussion method, lecture method	**English sounds: constants, vowels**	The student should be able to identify the sounds in the English language: consonants, vowels.	2 theoretic	thirteenth + fourteenth
Short exams, homework assignments, discussions	Discussion method, lecture method	**Review of the article**	A comprehensive review of all the material's vocabulary	2 theoretic	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	**Recommended books and references (scientific journals, reports...)**
Lib.gin	**Electronic references and websites**