Course Title: Basic Agriculture
Course Code: FT 205
Resource Person: Wahab Nazir
Department: Food Science and Technology

School of Food and Agricultural Sciences (SFAS) Vision
SFAS endeavors to be a premier center of excellence, offering innovative, high-quality education and professional programs aimed at achieving academic and research excellence, enriching the lives of individuals and making a difference in the world of academia and industry, and to develop a society of professionals, who can contribute towards the betterment of their respective communities.

SFAS Mission
SFAS Mission SFAS provides an intellectually rich, collaborative, research-focused and dedicated learning environment for students, faculty, and staff, while serving the community at various levels. SFAS at UMT has been established with the aim to integrate recent advances in food sciences/technology and agricultural innovations.

Program Learning Objectives (PLO's)

Students graduating with BS Food Science and Technology shall be able to:

1. *Explain the basic principles of food sciences, and its multidisciplinary scope.*
2. *Explain the physical, chemical and biological properties of food and their effects on food safety, and sensory and nutritional quality.*
3. *Apply analytical techniques to characterize composition, and to identify physical, chemical and biological changes in foods.*
4. *Explain the effects of food processing, engineering, preservation, packaging, and storage on food safety and quality.*
5. *Identify the importance of food laws and regulations in ensuring safety and quality of the processed/manufactured foods.*
6. *Conduct applied research and use statistical tools in experimental design and data analysis.*
7. *Apply acquired knowledge to real world situations in food systems, components, production, and processes.*
8. *Apply critical thinking to professional problems.*
9. *Communicate effectively in both oral and written forms.*
10. *Develop organizational, teamwork, and leadership skills.*
11. *Demonstrate professional skills and thoughts of ethical, social integrity, and respect for diversity.*
12. *Demonstrate preparedness for continued reflective practice, and lifelong learning relevant to careers in food sciences.*

Course Objectives (CLO's)

After the completion of this course, a student will be able to:

1. *Provide the basic knowledge and background of Pakistan's agriculture*
2. *Demonstrate the effect of different intrinsic and extrinsic factors on the agriculture of the country*
3. *Familiar with the different tillage and irrigation practices used in crop production*
4. *Get exposure to different facets of harvesting and storage of agricultural commodities*
5. *Demonstrate the methods used in the collection of produce from field and storage techniques to extend the shelflife of the crop*

Learning Objectives

Sr#	Course Learning Objectives	Link with Program Learning Objectives
1.	*Provide the basic knowledge and background of Pakistan's agriculture*	Students will be able to understand the origin of the growth of vegetable and animal-based food
2.	*Demonstrate the effect of different intrinsic and extrinsic factors on the agriculture of the country*	Students are expected to know about the natural factors associated with the quality of the raw food
3.	*Familiar with the different tillage and irrigation practices used in crop production*	Students will be easily understanding the different techniques used for the processing and preservation of field crops after harvesting based on their physicochemical characteristics
4.	*Get exposure to different facets of harvesting and storage of agricultural commodities*	Students will be easily understanding the different techniques used for the processing and preservation of field crops after harvesting based on their physicochemical characteristics
5.	*Demonstrate the methods used in the collection of produce from field and storage techniques to extend the shelflife of the crop*	Students will be easily understanding the different techniques used for the processing and preservation of field crops after harvesting based on their physicochemical characteristics

Course Learning Outcomes

After successful completion of the course work, students have the skills to:

1. *Describe the concept of agriculture, its branches and their relationship with allied disciplines*
2. *Describe the significance of the agriculture sector in the country's Economy*
3. *Understand the Agro-Ecological zones of Pakistan and the impact of climatic factors on agricultural productivity*
4. *Measure the land area and demonstrate agriculture tools and implements*

Teaching Methodology

Interactive classes:

1. *Use media to increase student engagement and improve learning outcomes.*
2. *Try adding metaphors to help students remember details.*
3. *Give students a real-world context with extra projects to reinforce skills.*
4. *Provide practical practice within your lessons. Making it relatable will do wonders.*

Case-based teaching:

Class Participation

Positive, healthy, and constructive class participation will be monitored for each class. Particular emphasis will be given to participants during the presentation sessions. How the question is asked or answered will also be noted. Your behaviour, as business executives in the class will contribute to the class participation marks.

Word of Advice

Assignments/ projects are very demanding and time-consuming. Since you might be exposed to the real corporate environment, the ensuing reality checks could be demoralizing and frustrating. So, you must learn to handle intragroup conflicts and any clash of interests. Unless you start working on the assignments/ projects right away from the very first day you are likely to miss the deadlines.

Participant Responsibilities:

Students should be responsible enough to practice whatever they have learned during class sessions. They should also implement it in other subjects as well. They are expected to come prepared in the class.

Class activities:

Presentations

After careful analysis, the resource person will constitute the groups to achieve balanced heterogeneity among groups, for group assignments/projects and will have the final decision in this regard. Every member of the group is expected to be able to handle all aspects of the assignments. Groups are not allowed to choose presenters for various parts of the presentations; instead, resource person will nominate them. Individuals will be judged for their understanding of the topic through question handling. Q/A section of the presentations will way heavily for grading of assignments/ projects.

Class Discussions:

During class, each student will work in a team on discussion questions. Teams will be assigned questions, allowed ten minutes for Internet research, and permitted five minutes to present their results. Points are earned by active participation with your team.

Applied Projects:
This is a practical-based course. Regular attendance is the best predictor of success. Students will perform different practices with detailed instructions, teacher demonstrations, and video tutorials.

STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK

Class Policy:

Be on Time

You need to be at class at the assigned time. After minutes past the assigned time, you will be marked absent.

Mobile phone Policy

TURN OFF YOUR MOBILE PHONE! It is unprofessional to be texting or otherwise.

Email Policy

READ YOUR EMAILS! You are responsible if you miss a deadline because you did not read your email. Participants should regularly check their university email accounts regularly and respond accordingly.

Class Attendance Policy

A minimum of 80% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddings are absences and will not be counted as present. You have the opportunity to use 6 absences out of 30 classes. Participants with less than 80% of attendance in a course will be given a grade 'F' (Fail) and will not be allowed to take end-term exams. International students who will be leaving for visas during the semester should not use any days off except for visa trips. Otherwise, they could reach short attendance.

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Withdraw Policy

Students may withdraw from a course till the end of the 12th week of the semester. Consequently, grade W will be awarded to the student which shall have no impact on the calculation of the GPA of the student. A student withdrawing after the 12th week shall be automatically awarded an "F" grade which shall count in the GPA.

Moodle

UMT –LMS (Moodle) is an Open-Source Course Management System (CMS), also known as a Learning Management System (LMS). Participants should regularly visit the course website on MOODLE Course Management system and fully benefit from its capabilities. If you are facing any problem using Moodle, visit http://oit.umt.edu.pk/moodle. For further query send your queries to moodle@umt.edu.pk.

Harassment Policy

Sexual or any other harassment is prohibited and is constituted as a punishable offense. Sexual or any other harassment of any participant will not be tolerated. All actions categorized as sexual or any other harassment when done physically or verbally would also be considered as sexual harassment when done using electronic media such as computers, mobiles, internet, emails, etc.

Use of Unfair Means/Honesty Policy

Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.

Plagiarism Policy

All students are required to attach a "Turn in" report on every assignment, big or small. Any student who attempts to bypass "Turn tin" will receive an "F" grade which will count towards the CGPA. The participants submit the plagiarism report to the resource person with every assignment, report, project, thesis, etc. If a student attempts to cheat "Turn tin", he/she will receive a second "F" that will count towards the CGPA. There are special rules on plagiarism for final reports etc. all outlined in your handbook.

Communication of Results

The results of quizzes, midterms, and assignments are communicated to the participants during the semester and answer books are returned to them. It is the responsibility of the course instructor to keep the participants informed about his/her progress during the semester. The course instructor will inform a participant at least one week before the final examination related to his or her performance in the course.

Course Outline

Course code: FT-205 **Course title**: Basic Agriculture

Program	BS Food Science and Technology
Credit Hours	3 (2-1)
Duration	16 Weeks
Prerequisites (If any)	Biology
Resource Person Name and Email	Wahab Nazir wahab.nazir@umt.edu.pk
Counseling Timing & Room #	3 hours per week
Contact no.	-
Web Links	-

Director Programme Signature_____

Date_____

Dean's signature_____

Date_____

Grade Evaluation Criteria

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

Marks Evaluation	Marks in percentage
Class Project/Presentation	15%
Quizzes	10%
Assignments	10%
Lab	20%
Mid-Term	20%
Final exam	25%
Total	**100%**

Recommended Text Books:

1. Arya, R. L., Arya, S., Arya, R., & Kumar, J. (2020). *Fundamentals of Agriculture (Vol. 1-2)*: Scientific Publishers.
2. Sunda, N. R., & Kaswan, S. (2018). *Basic Agriculture*: Surahee Publications.
3. Hanson, A. A. (2020). *Practical Handbook of Agricultural Science*: CRC Press.
4. Nations, F. A. O. U. (2019). Agro-Ecological Zones in Punjab - Pakistan: Final Report: Food & Agriculture Org.
5. Khan, I. A., & Khan, M. S. (2018). Developing Sustainable Agriculture in Pakistan: CRC Press.
6. Ashraf, M., Öztürk, M., Ahmad, M. S. A., & Aksoy, A. (2012). *Crop Production for Agricultural Improvement*: Springer Netherlands.
7. Majumdar, D. K. (2011). Pulse Crop Production: Principles and Technologies: PHI Learning Private Limited.
8. B. Chandrasekaran K. Annadurai E. Somasundaram. 2010 A text book of Agronomy. New Age International (P) Ltd, India.
9. Ali, H. (2010). Fundamentals of Irrigation and On-farm Water Management: Volume 1: Springer New York.

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No	Topics to be covered in the course	Learning Objective of this topic	Expected Outcomes from Students	Teaching Method	Assessment Criteria	Deadlines and Homework
1	Agriculture, concept, history, and importance	To understand agriculture and its history in Pakistan	Describe the term agriculture and its importance in the country	Lecture Class Discussion	Question/ Answer session	Within a Week
2	Overview of Agriculture of Pakistan	To explain the factors intrinsic and extrinsic factors affect agriculture. To understand the current status of agriculture in Pakistan	Discuss the changes that evolved in agriculture in Pakistan.	Lecture Literature Review	Short Assignment Class Discussion	Within a Week
3	Agro-Ecological zones of Pakistan	To learn about the different agroecological zones of Pakistan and their current status To understand important crops grown in that agro-ecological zones	Describe the important features of each agro-ecological zone	Lecture	Short Quiz	Within a Week
4	Branches and allied sciences in agricultures	To differentiate between different branches of agriculture To understand the relation of allied sciences with agriculture	Describe the agricultural branches and role of allied sciences with agriculture	Lecture Class Discussion	Assignment	Within a Week
5	Farming systems	To provide basic knowledge about the farming techniques used in Pakistan	To utilize the appropriate farming	Lecture Video tutorial	Class Activity	Within a Week

		To understand the difference between conventional and modern agriculture farming	technique for crops growing in-country			
6	Factors Affecting Crop Production	To demonstrate the different biotic and abiotic factors that affect the crop growth To familiarize the students with crop production strategies	Improve the understanding of factors responsible for the good or poor crop growth in Pakistan	Lecture Case study	Class projects Quiz	Within a Week
7	Tillage, Types of Tillage, Factors affecting Tillage	To understand the term tillage and its role in crop production To know about the different tillage types	To utilize the different tillage practices uring crop production	Lecture Class Discussion Video Tutorial	Lab Performance	Within a Week
8	**Revision of Course/ Mid Exam**					
9	Seed and seed sowing, advantages, germination, seed rate, seed treatment	To describe the seed and different seed sowing practices To understand the effect of the seed treatments on the growth of seeds	To utilize effectively manage the seed sowing practice	Lecture Lab Practical	Quiz Lab Performance	Within a Week
10	Weed Sciences, characteristics, types, crop weed interaction	To familiar with the term weed and its types To understand the effect of weed growth on crop yield.	Effectively use the weed management practices to control weed growth	Lecture Lab Practical	Class Discussion Lab Performance	Within a Week
11	Irrigation and Water Management, Importance,	To familiar with the term irrigation and its importance	To effectively utilized the knowledge to manage the irrigation	Lecture Video tutorial	Class Assignment	Within a Week

	Sources, crop water requirement	To differentiate between irrigation types	during crop production			
12	Nutrient Management, Classification of Essential Elements	To understand the role of nutrients in the crop growth To classify the major and minor essential nutrients based on their requirement	Improve the crop growth by providing the essential nutrients	Lecture	Lab Performance	Within a Week
13	Fertilizer, Classification, Biofertilizer, method and Time of fertilizer	To describe the role of fertilizer in the crop growth To describe different methods of fertilizer application	Manage the fertilizer application during the crop production	Lecture Class Activity	Lab Activity Class Quiz	Within a Week
14	Harvesting, Criteria of harvesting of the crop	To understand the term harvesting To familiar with tools and techniques used for the harvesting of the crop	Utilize best harvesting practices to harvest the crops	Lecture Class Discussion	Lab Activity Class Presentations	Within a Week
15	Post-harvest Technology, Method, Types of Storage	To understand the post-harvest technology of the crops To familiar with crop storage practices	To develop best storage practices for long term storage of crops	Lecture	Class Presentations	Within a Week
	Final Exam					

Lab Component

During the course students will be able to perform the following practicals in the laboratory:

- *Land measuring units*
- *Demonstration of hand tools and tillage implements*
- *Identification of crop plants, weeds, and seeds*
- *Identification of organic and inorganic fertilizers*
- *Demonstration of various irrigation methods*
- *Field visits*