جامعة الإسكندرية
ALEXANDRIA
UNIVERSITY
Faculty of Agriculture

Bylaws for undergraduate students

Faculty of Agriculture – Alexandria University

Ministerial Resolution No. (3171)

Dated: 2nd August 2017

The faculty is accredited by Resolution No. (136) of 2014

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Prof. Dr. Mohammed Bahi El-Din Mohammed - Dean of Faculty of Agriculture

And Prof. Dr. Ahmed Mohamed Mahdy – Vice Dean for Education and Student Affairs

would like to acknowledge with thanks gratitude all staff members in the academic departments for their exceptional efforts and contribution in the initiation of the English version of Faculty of Agriculture bylaws for undergraduate students for the first time.

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Contents

General frame and internal regulation of the Faculty of Agriculture Alexandria University

About the faculty:

The Faculty of Agriculture was originally established in August 1942 in Damanhour governorate, where it occupied the agriculture school building there. The faculty started up with only 8 programs, namely, Soil Science, Agricultural Economics, Animal Production, Horticulture, Entomology, Food Technology, Pesticide Chemistry, and Crop Science, besides a General Program. The laboratories were established to fulfill the requirements of the 61 students enrolled at that time. In 1947, however, the efforts of the five staff members who managed the faculty at that time (Prof. Dr. Mohamed Mounir Al-Zalaky, Prof. Dr. Shafeek Ali El-Kheshen, Prof. Dr. Ali El-Kheshen, Prof. Dr. Ibrahim Abdelrahman Sayed Ahmed and the Dean; Prof. Dr. Hamed Selim), succeeded in transferring the faculty to Alexandria in its current location in El-Shatby region, in Alexandria nearby other faculties of Alexandria University. The faulty was housed in the buildings of the Italian school (Regie Suole Littorie), originally opened by King Victor Emmanuel III of Italy in 1933, that was transformed later on by the British into a military hospital during World War II. The buildings were actually shared with the Faculty of Law and the public library. In 1962 the Faculty of Law moved to another location in Alexandria, leaving the Italian school buildings entirely for the students of the Faculty of Agriculture. With the increase in the number of students enrolled, new buildings and labs were established to accommodate those numbers those include;

- The plant science building, established in 1954 and houses the departments of crop science, vegetable crops, pomology, floriculture, forestry, and genetics.
- The soil science and pesticide buildings were established in 1961.
- The food science building, housing the department of food science and dairy science, was established in 1963.
- The agriculture engineering building was established in 1964.
- The agriculture extension building, housing the agriculture extension and home economics departments, was established in 1969.
- By the beginning of the seventies, new extensions were added to the plant science buildings with the establishment of the nucleus of the central laboratory.
- By the end of the seventies, new floors were added to most buildings to accommodate the increase in the number of students and administrative sections and established an extensive and modern library.

Currently, the entire area occupied by the Faculty of Agriculture amounts to 9 acres (3.75 ha), where buildings take up about 7.7 acres, and the remaining area is green landscape.

The outlines of this new regulation and its objectives:

- Implementing the credit hour system to cope with international systems of education.
- Redesigning and restructuring many courses to achieve the targeted intended learning outcomes (ILOs).
- Elective courses from within or outside the study program amounting to a total of 30 credit hours are available for students to choose from. This intends to broaden the students' scope and improve their knowledge and skills.
- The application of a Quality Assurance and Accreditation System to ensure meeting of the academic standards and the quality of the learning opportunities.
- Improvement of the student training programs by increasing the training sessions and improving its standard via partnerships with major agricultural companies and institutes.
- Improving language capabilities of students through implementation of English language courses, in order for our graduates to stand out in a very competitive job market.
- Raise awareness of our graduates about actual scientific and environmental contemporary issues.

Règlment interne des études universitaire de la Facultéd'Agriculture – Université d'Alexandrie

Premier Cycle
Heures- Créditées

Décisionministérielle (3171) - datée du 2 août 2017

Présentation de la Faculté:

La Facultéd'Agriculture - Université d'Alexandrieest issue dans la ville de Damamhourenaoût 1842. Au cours des deux premières années, elleaoccupé le bâtiment de l'École Supérieure d'Agriculture. L'annéesuivante, le bâtiment du Lycée de Damamhours'yrajoute après quelques modifications pour s'adapter à la nature des études agricoles. Il sagit de certain nombre de laboratoires pour répondre aux besoinséducatifs des premiers étudiants (61 étudiants).

À ce moment, les études ontcommencé avec certainesspécialisationscomme science de sol, économieagricole, production animale, horticulture, animaux et insectes, industries alimentaires, pesticides et fongicides et sciences des cultures agricolesen plus au départementgénéral.

Contrairement au reste des facultés de l'Universitéd'Alexandrie, les pavillons de la facultéd'Agriculture, spécialement, saientsitués au Damanhour, unevilleéloignée, ce qui ne réalise pas l'unité de l'Université dans un mêmeendroit.

Grâce aux grands efforts du corps professoral de la Faculté à cette époque, notamment le professeur Muhammad Mounir Al-Zalaqi, le professeur Shafiq Ali Al-Khishn, le professeur Ali Ali Al-Khishn, le professeur Ibrahim Abdel Rahman Sayed Ahmed en plus au professeur Dr. Hamed Salim, le doyen de la faculté, la Facultéestdéplacée à la villed'Alexandrieen 1948, oùellepartagait avec la Faculté de droit et la bibliothèquepublique le bâtiment de l'écoleitalienne «Letoria».

Suite à l'augmentationconstante de nombre de nouveaux étudiant(e)s accepté(e)s dans les différentesfacultésuniversitaires et en raison des nouvelles constructions établies au début des années 60, la faculté des droits estdéménagée sur un nouveau bâtimenten mars 1962, ainsi que la facultéd'Agricultureestrestée dans le bâtiment de l'écoleitalienne.

Avec le temps, le nombred'étudiantss'accroitrapidement, ainsi que de nombreux nouveaux domaines et divisions de specialization. Cettecroissancedécouleune mise à jour du plan de construction sur le cite la facultaire. Les plus importantspavillonssont:

1. Le pavillon de Sciences Végétales - a étécrééen 1954 et regroupe les départements de cultures, de légumes, de fruits, de plantesornementales, d'hérédité et d'arbresenbois.
2. Un pavillon qui regroupe le département de la chimie des pesticides et le département de Sciences des terres et des eaux a étécrééenen 1961.
3. Le pavillon des industries agricoles, alimentaires et laitières, qui ontouvertsleursportesen 1963
4. Le pavillon de génieagricole, crééen 1964.
5. Le pavillond'Extension Agricole crééen 1969 regroupe deux départementextentionagricole et économie domestique.

6. Au début des annéessoixante-dix, de nouvellesbatimentsontétéconstruits pour le manque des laboratoires de cultures, légumes, fruits, horticulture, genie génitique et foresterie.
7. Bâtiment de la construction et l'exploitation des premières unités du laboratoire central à la faculté.
8. A la fin des années 70, les bâtimentsontétéaménagésenaveuglantnombred'entreeux pour accueillirl'augmentation continue des diversesactivités et services du complexefacultaire. Toujours, unepartie de l'ancienbâtiment de la facultédésormaitoccuperpar la bibliothéque après les renovations.

La facultéd'Agricultureoccupe un emplacement privilégié dans la villed'Alexandrie dans la secteur de El-Shatby. La surface totale de la facultéestd'environneuf feddans, dont 6,6 feddans sont des bâtiments et le restesont des espaces verts.

Les caractéristiquesprincipales et les objectifs du développement :

- Travailler avec le systèmed'heure-créditestunenécessité gouvernante, enréponse aux variables internationals.
- Élabor les cours des programmesprofessionnelles pour atteindre les objectifsd'éducation.
- L'étudiantpeutchoisir au moins 34 heurescréditéesen tant des cours de son cheminementou de l'extérieurcomme des exigences du programmeafind'acquérir des connaissances et des compétences pratiques dans divers domainesagricoles, ainsi que le cheminemet de spécialisation.
- Mettreenœuvre le systèmed'assurancequalité et d'accréditation sur les programmeséducatifsproffesionnels, qui vise à fournir aux étudiants des connaissances et des compétencesmentales, général et général.
- Développer des programmes de formation sur le terrain endoublant la période de formation, ainsiqu'enprêtant attention à la qualité de la formation enétablissant des partenariats avec les institutions et les entreprisesagricoles et les grandes exploitations.
- Ajout de certaines matières, telles que la langue anglaise, pour augmenter l'efficacité du diplômé à concourir sur le marché du travail.
- Améliorer les performances professionnelles des diplômés et les sensibiliser aux enjeuxscientifiques et environnementauxcontemporains.

Regulations of the faculty of Agriculture Alexandria University

Chapter I
Faculty's mission and vision, departments, admission regulations and academic degrees offered.

Article (1): Faculty vision, mission and objectives:

a- Faculty vision:

The faculty looks forward to achieving excellence in agriculture development at national, regional, African and international levels.

b- Faculty mission:

Contribute to improving knowledge and research competency that matches the international standards and so improving the ability to create and innovate to meet the requirements of production institutions either locally, regionally or on the African level.

c- Faculty objectives:

1- Providing educational programs in line with referenced international standards.

2- Restructuring the scientific research program to meet the demands of the agricultural production sector and scientific community.

3- Support the building capacity of the institution to assure the concept of self-fundraising and community service.

Article (2): The Faculty of Agriculture-Alexandria University encompasses nineteen academic departments, namely:

Serial number	Department	Code
1	Agricultural Extension Education	01
2	Forestry and Wood Technology	02
3	Economics and Agribusiness	03
4	Home Economics	04
5	Agricultural and Bio-systems Engineering	05
6	Dairy Science and Technology	06

7	Plant Pathology	07
8	Animal and Fish Production	08
9	Poultry Production	09
10	Applied Entomology	11
11	Vegetable Science	12
12	Floriculture, Ornamental Horticulture and Landscape Gardening	13
13	Soil and Water Science	14
14	Home Science and Technology	15
15	Pomology	16
16	Pesticide and Chemistry Technology	17
17	Rural Development	18
18	Crop Science	19
19	Genetics	20

Article (3): The council of Alexandria University based on request of faculty council offer the following degrees:

a- Bachelor's degree in Agricultural Science in one of the following programs:
   I. Plant Production Program.
   II. Animal Production Program.
   III. Food Sciences Program.
   IV. Plant Protection Program.
   V. Agricultural Biotechnology Program.
   VI. Agricultural Economics and Social Sciences Program.
   VII. Soil and water Program.

b- Bachelor's degree in Agricultural Engineering at the Agricultural Engineering Program.

c- Bachelor's degree in Designing and Landscape Gardening

Article (4): The graduation certificates are awarded for the programs mentioned in article (3) and the related specializations are as follows:

Programs and related specializations	Code
I. Plant Production Program	31
● Forestry and Wood Technology	02
● Vegetable Crops	12
● Floriculture, Ornamental Horticulture, and Landscape Gardening	13
● Pomology	16
● Crop Science	19
II. Animal Production Program	32
● Animal Production	08
● Poultry Production	09
III. Food Sciences Program	33
● Dairy Technology	06
● Food Technology	15
IV. Plant Protection Program	34
● Plant Pathology	07
● Entomology	11
● Pesticides Chemistry and Technology	17
V. Agricultural Biotechnology Program	35
VI. Agricultural Economic and Social Sciences Program	36
● Agriculture Extension	01
● Agricultural Economics	03
● Home Economics	04
● Rural Sociology	18
VII. Soils and Water Program	14
VIII. Agriculture Engineering Program	05

Article (5): The academic courses for achieving the bachelor degree

Tables from 1 to 94 illustrate the academic courses for achieving the bachelor degree and the number of hours of theoretical and practical lessons or coursework and the corresponding credit hours for each course. Courses are coded as follows:

Each course-code consists of five numbers:

- The first and the second number from left, indicate the code of the academic department teaching this course (article 2) or program code (interdisciplinary courses between departments in the same field) or specialization (article 4).
- The code “30” indicates that this course is a general course and doesn’t belong to a specific program perse.
- The third number (1,2,3&4) indicates the academic level for which the course is for.
- The fourth and the fifth numbers indicate the serial number of the course starting from 00 to 99.

Article (6): High school graduates are accepted from different division as follows:

a- High school students from the "scientific division", or its equivalent, are admitted in the programs of plant production, animal production, plant protection, agricultural economics and social sciences, agricultural biotechnology and soil and water.

b- High school students from the "mathematical division", or its equivalent, are admitted in the agricultural engineering program.

Article (7): Students from other disciplines of higher education (Public or private university degrees/military degrees/Azhar degrees) could be enrolled to pursue the degree of “Bachelor in Agricultural Sciences” under the condition that they have already succeeded in the high school exams in either scientific or mathematical division.

PROJET DE NOUVEAU RÈGLEMENT DE LA

FACULTÉD'AGRICULTURE - UNIVERSITÉ D'ALEXANDRIE

Chapitre I

La mission de la Faculté, les départementsacadémiques, le systèmed'admission et les diplômesuniversitaires

Article 1: La mission et la vision de la Faculté:

A. Vision:

La faculté aspire à atteindrel'excellence dans le développementagricole à l'échellenationale, régionale, africaine et mondiale.

B. Message:

Contribution dans développement des connaissances et des compétences de recherche qui suivent le rythme des normesinternationales, ce qui les rend capablesd'innovation et de créativité pour répondrebesoinsd'activité de groupe des organisations de production l'environnement et le milieu environnantsont protégés

C . Objectifs:

1. Offrir des programmeséducatifs qui suivent le rythme des normes de référenceinternationales.
2. Structurer le système de recherche scientifique pour suivre le rythme des exigences de l'activité productive et de la publication scientifique
3. Soutenir la capacitéinstitutionnelled'unequantité qui confirmel'idée de développersespropresressources et de servir la communauté et l'environnement

Article 2: La Facultéd'Agriculture de l'Universitéd'Alexandriecomprend dix-neufdépartementsacadémiques:

Série	Département	Code
1.	Extension Agricole	01
2.	Foresterie et Technologies du Bois	02
3.	Économie et Gestion des Entreprises Agricole	03
4.	Économie Domestique	04
5.	Génie Agricole et Biosystèmes	05
6.	Sciences et TechnologieLaitière	06
7.	Phytopathologie	07

8.	Production Animale et Piscicole	08
9.	Production de Volaille	09
10.	EntomologieAppliquée	10
11.	Légumes	11
12.	Floriculture, Horticulture des Ornementales et AménagementPaysager	12
13.	Sciences des Sols et de l'Eau	13
14.	Sciences et TechnologieAlimentaire	14
15.	Pomologie	15
16.	Chimie et Technologie des Pesticides	16
17.	SociologieRurale	17
18.	Agronomie	18
19.	Génétique	20

Article 3: Octroi du Conseil de l'Universitéd'Alexandrie base sur la demande du Conseil de la Faculté.

A. Baccalauréaten sciences agricoles dans l'un des programmessuivants :
1. Production végétale.
2. Production animale.
3. Sciences de l'alimentation.
4. Protection des plantes.
5. Biotechnologieagricole.
6. Agriculture économique et socialegénérale.
7. Sols et eau.

B. Baccalauréatengénieagricole dans le programme de génieagricole.

Article 4: Les certificats de fin d'étudessontdélivrésconformément aux programmesmentionnés à l'article (1) et aux orientations spécialisées qui sontrattachéescomme le suivant:

Programmes et disciplines spécialiséesaffiliées au code
1. Production végétale
   - Foresterie et technologie du bois
   - Légumes
   - Fleurs, plantesornementales et aménagementpaysager
   - Pomologie
   - Agronomie
2. Production animale
   - Production animale
   - Production de volaille
3. Sciences de l'alimentation
   - Technologielaitière
   - Industriealimentaire

4. Protection des plantes:
   - Phytopathologie
   - Entomologieéconomiques
   - Chimie et technologie des pesticides
5. Biotechnologieagricole
6. Économieagricole et sciences sociales
   Orientation agricole
   Économieagricole
   Économie domestique
   communautérurale
7. Sols et eaux
8. Génieagricole

Article 5: les coursnessicites le obtention du Baccalauratincluant

Les tableaux suivants (de 1 à 94) indiquent les coursnessicites le obtention du Baccalauratincluant le nombre des heures pour les coursthéoriques et pratiques, et les heurescréditées pour chaquecours.

Le code de cours se compose de cinq chiffres comme suit:

- Les deux premiers chiffres indique le code du départementacadémiqueenseignant le cours (article 2) ou le code du programme des coursinterdisciplinaires dans le domaine - orientation spécialisée - (article 4), pourtant les chiffres 30 indique que c'est un coursgénéral qui ne suit pas un programmeacadémiquespécifique.
- Le troisième chiffre indique le niveaud'étudesuniversitaire de un a quatre
- Les deux dernière chiffres indiquent la série du cours au départementd'enseignement.

Article 6: Les étudiant(e)s qui ontobtenu le Thanawya Ama (le diplômed'étudesecondaireégyptian) sontaccepté(e)s dans les différentes divisions de la facultécomme le suivant:

(a) Thanawya Ama - Discipline scientifiqueou son équivalentestaccépté dans les programmesfacultairessuivants: production végétales, production animales, science alimentaires, phytoprotection, biotechnologieagricole, sciences économiques et socialesagricoles, sols et eaux.

(B) Thanawya Ama - Discipline mathématiquesou son équivalentestaccépté dans le programme de génieagricole.

Article 7: Les étudiant(e)s titulaires d'un diplômesupérieur (universitaireouprivé /collègialsouinstitutsmilitaires/ collègesouinstitutsAzhariya) peuventêtre admis à l'obtention d'un baccalureaten sciences agricole, à condition l'obtention de Thanawya Ama discipline scientifiqueavant le diplômesupérieurobtenutandis que l'obtention d'un baccaluréatengénieagricole, demantl'obtention de Thanawya Ama discipline mathématiquesavantl'obtention du diplômesupérieur.

Chapter II
Academic System and Student Assessment

Article (8): The faculty applies the credit hour system and the academic year is mainly divided into two semesters. The duration of each semester is fifteen weeks, including two weeks for the final practical and oral exams. The theoretical exams commence following the previously mentioned weeks. The faculty council may decide to commence a summer semester, and the registration of students in this semester is optional. The duration of the summer semester is eight weeks, as the teaching hours are doubled per week, compared to a regular semester. The final practical, oral and theoretical exams commence after the eighth week. The minimum number of students to register for any summer course and the tuition fees for each course are reviewed and decided the faculty council.

Article (9): A credit hour is an academic unit of measurement equivalent to one theoretical hour or two practical hours or three hours of laboratory/field/coursework for a full academic semester, and a credit hour is equivalent to 100 degrees.

Article (10): To obtain a bachelor degree in one of the programs or specializations explained in Article (4), the student must successfully accomplish 140 credit hours (One hundred and forty credit hours).

Article (11): Students can register a number of courses with a minimum of 12 credit hours and a maximum of 21 credit hours per semester. However, only 9 credit hours are permitted as a maximum for the summer semester. The faculty council may make changes to these credit hours for specified reasons.

Article (12): Based on the recommendation of the Education and Students Affairs Committee, the faculty council appoints academic advisors from among the faculty members to all enrolled students. The academic advisors are appointed to assist and guide students during their academic years in order to realize the most suitable courses, programs and specialization that best fits their needs and capabilities. However, students are responsible for their elective course registration, i.e., the academic advisors' role is not obligatory.

Article (13): At the end of the academic year, the faculty council determines at the programs and specializations available for registry, taking into consideration both articles 2 and 4.

Article (14): Students are distributed among programs/specializations based on the student selection, but also taking into consideration the student's cumulative grade achieved till the end of the second year and the fulfillment of the necessary requirements for the program/specialization. The program/specialization requirements are determined by the departments' councils and approved by the faculty council and the recommendations of the committee of education and student affairs.

Article (15): Based on the departments councils' decisions, the faculty council determines the system for distributing grades for each of the final theoretical, practical, coursework and oral exams. In all cases, the grade for the final theoretical exam is not less than 60% and the oral exam does not exceed 10% of the total final score for any course. This does not apply to the courses with special description, where the grade distribution is decided by the faculty council.

Article (16): Periodic exams (including a midterm exam) should be organized by the department councils and are to be held during the academic semester. On the other hand, theoretical, oral, and practical exams are to be held at the end of each semester. The duration of the theoretical exam is two hours, and any changes to these guidelines should be approved by the faculty council.

Article (17): The student must attend the theoretical lectures and participate in the practical/coursework, research activities and discussion rooms according to the system approved by the faculty council. The student is not permitted to sit for the final examination if he/she fails to attend at least 75% of the number of practical lessons for each course. Accordingly, students who do not attend the required number of lessons will receive a "Fail" grade. However, if the student provides evidence of an acceptable excuse, that is recognized by the faculty council for his absence, the result would be changed to "EX" (Absent with an Acceptable Excuse).

Article (18): Students are classified during their studies to obtain a Bachelor's degree in agricultural sciences into four academic levels:

- First Level: Students who have not successfully completed 28 credit hours of study.
- Second Level: Students who have successfully completed at least 28 credit hours of study.
- Third Level: Students who have successfully completed at least 65 credit hours of study.
- Fourth Level: Students who have successfully completed at least 100 credit hours of study.

As for the agricultural engineering program, students are classified during their studies as follows:

- First Level: Students who have not successfully completed 29 credit hours of study.
- Second Level: Students who have successfully completed at least 29 credit hours of study.
- Third Level: Students who have successfully completed at least 64 credit hours of study.
- Fourth Level: Students who have successfully completed at least 99 credit hours of study.

The transition between levels takes place at the end of the academic year.

Article (19): Both the grading and GPA are calculated from the scores obtained by the student for each course as follows:

Total score as a percentage	GPA	Degree	Grade
From 95% and more	From 3.7 to 4.00	A^+	Excellent (+)
From 90% to less than 95%	From 3.4 to 3.6999	A	Excellent
From 85% to less than 90%	From 3.1 to 3.3999	A^-	Excellent (-)
From 80% to less than 85%	From 2.8 to 3.0999	B^+	Very Good (+)
From 75% to less than 80%	From 2.5 to 2.7999	B	Very Good
From 70% to less than 75%	From 2.2 to 2.4999	C^+	Good (+)
From 65% to less than 70%	From 1.9 to 2.1999	C	Good
From 60% to less than 65%	From 1.6 to 1.8999	D^+	Fair (+)
From 55% to less than 60%	From 1.3 to 1.5999	D	Fair
From 50% to less than 55%	From 1.0 to 1.2999	D^-	Fair (-)
Less than 50% of the total	0.0	F	Fail
Less than 30% in theoretical part	0.0	F^-	Fail
----------	0.0	AB	Absent
----------	0.0	EX	Excuse
----------	0.0	SR	Stop Registration
----------	0.0	FW	Forced Withdrawal

Calculating the course grade points of a certain course is performed according to the following equation:

$$\{(\mathrm{m} - 50)\ \mathrm{x}\ 0.06\} + 1 = (Course\ grade\ points)CGP$$

Where "**m**" is the total score as a percentage, that the student achieved from the theoretical, oral and practical exams in addition to the coursework activities during the semester.

Mathematical example:

If the student scores 70 (from a total of 100) in certain course, his points could be calculated as follows:

$$\{(70 - 50)\mathrm{x}0.06\} + 1 = 2.20(\mathrm{C+})$$

Article (20): The cumulative grade point average is calculated at the end of each academic level, as well as the general grade at graduation with the same system used in calculating course grades as follows:

Cumulative GPA	Degree	Grade
From 3.7 to 4.0	A^+	Excellent (+)
From 3.4 to 3.6999	A	Excellent
From 3.1 to 3.3999	A^-	Excellent (-)
From 2.8 to 3.0999	B^+	Very Good (+)
From 2.5 to 2.7999	B	Very Good
From 2.2 to 2.4999	C^+	Good (+)
From 1.9 to 2.1999	C	Good
From 1.6 to 1.8999	D^+	Fair (+)
From 1.3 to 1.5999	D	Fair
From 1.0 to 1.2999	D^-	Fair (-)

The sum of the number of credit hours in each course is multiplied by the corresponding points obtained by the student, with the result being approximated to the nearest four digits after the decimal point.

Mathematical example:

A student achieved the following scores in 5 different courses during a certain semester (65, 80, 92, 64&92), and the credit hours for these courses were 3, 3, 3, 4&4, respectively. Accordingly, his semester average is calculated as follows:

Semester Grade Point Average (SGPA) =

$$\frac{1.9x3 + 2.8x3 + 3.52x3 + 1.84x4 + 3.52x4}{3 + 3 + 3 + 4 + 4}$$

=2.7118 which is equivalent to (B) or Very Good

Article (21): The graduate is granted "honors" degree if he/she obtains a very good grade, provided that his cumulative GPA is not less than 2.5 in any academic level and that he/she has not failed in any academic course during his/her studies at the university.

Article (22): A student is not allowed to enroll in a course that has a prerequisite unless he/she has successfully passed the prerequisite course.

Article (23): A student who fails in any course must re-register and pass that same course.

Article (24): The faculty council calls faculty members from the different departments within each program to form what is so-called "Scientific Circles" to regularly monitor the educational status of the entire program and submit reports with suggestions to the Education and Student Affairs Committee and then to the faculty Council.

Article (25): Only when a course is offered by the department during the specified academic semester, it is permitted for students to enroll in that course, provided that the number of students enrolled is no less than five students. The faculty council may re-consider this number according to new circumstances.

Article (26): Only after approval of the faculty council and the university council, new elective courses may be added to this regulation. Also, the content of any course may be modified only after an approval from the faculty council and the university council.

Article (27): Students are asked to select among their elective courses shown in this regulation after the relevant department councils have offered the courses at least two weeks before the beginning of each academic semester. The faculty council sets the necessary guidelines and procedures for implementing this "Selection process" based on suggestions and proposals from the Education and Student Affairs Committee.

Article (28): Each department provides a complete description of the courses offered, which is then approved by the faculty council. Once approved by the faculty council, the courses and their contents must be taught as approved and any further changes require a new petition for approval to be submitted to the faculty council.

Article (29): Based on recommendations from the academic advisor, the faculty council may allow a student to add/drop one or more courses in which he was already enrolled within the limits of the semester's credit hours. This must take place within the first two weeks of the first or second semester or during the first week of the summer semester.

Article (30): Students that are enrolled in the fourth-level can only graduate after their results are announced, and this can take place after the first or second semester exams (the fall semester or the spring semester), taking into consideration the provisions of Article (10), in case the students succeeded in all the academic courses that have registered for. In case the student fails in a maximum of 9 credit hours, he/she can enroll in the summer semester and sit for its exams and consequently can graduate in August (in case he passes all the academic courses that he/she have been registered for), taking into consideration the provisions of Article (10).

Article (31): To obtain a Bachelor's degree, faculty students must study the following mandatory courses:

Table (1): Mandatory courses for all students as a faculty requirement.

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours
30100	**Human Rights**	**2**	**-**	**-**
30110	**English Language (General)**	**2**	**-**	**2**
30220	**Introduction to Computer Sciences***	**-**	**2**	**-**
30399	**Field Training (related to the specialization)**	**-**	**6**	**2**
30400	**Design and Planning of a Graduation Research Project**	**1**	**-**	**1**
30401	**Graduation Project**	**-**	**6**	**2**
30410	**English Language (Scientific Terminology)**	**2**	**-**	**2**

* For student in agriculture science program only.

Article (32): All fourth-level students must choose one of the following courses as a university requirement:

Table (2): Elective courses for all students as a university requirement.

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours
30411	**Artistic Creativity**	**2**	**-**	**2**
30412	**Sport Culture**	**2**	**-**	**2**
30413	**Tourism and Society**	**2**	**-**	**2**
30414	**First Aid**	**2**	**-**	**2**
30415	**Critical Thinking**	**2**	**-**	**2**
30416	**Human and Environment**	**2**	**-**	**2**
30417	**Reproductive Health**	**2**	**-**	**2**

Article (33): It is possible to establish parallel programs or departments within a program to the ones existing in Articles 3 & 4 that teach in English or French languages using the same guidelines declared in this regulation. This can be achieved upon a request from the Faculty Council and after approval of both the University Council and the Supreme Council of Universities (SCU), after setting the terms and the conditions upon which students could be accepted for enrollment in these programs.

and after determining the conditions to be met by the students who will be enrolled in these programs.

Article (34): The students must comply with and follow the general regulations of the Alexandria University and the Faculty of Agriculture in terms of the studying system, warnings, dismissals, re-enrollment, acceptable excuses, suspension of enrollment, and also all the rules, laws and regulations declared in the Egyptian Universities Regulation Law.

Article (35): The provisions of this regulation shall be applied as of the following academic year to the date of its approval, on newly enrolled students and those remaining for re-admission in the first-level.

Chapitre II
MéthodePédagogique& Systèmed'Évaluation

Article 8: Le systèmeacadémique de la Facultéestbasé sur le systèmed'heures-crédits et les semestres. L'année académique est diviséeen deux semestres, la durée de chaquesemestreest de quinze semaines, y compris les épreuves pratiques et orauxsuivit par les examens écrits. Le conseil de la facultépeutdécider un troisièmesemestreenété; l'inscription de l'étudiant à cesemestreest facultative. La durée des études durant le trimestred'étéest de huitsemaines, à condition que les heuresacadémiqueshebdomadairesallouées aux coursenseignés dans cesemestresoientdoublées. La huitièmesemaineestsuivie par des examens pratiques, oraux et écrits. Le Conseil de la Facultédécide le nombre minimum d'étudiantsréquis pour offrir les coursd'étéainsi que les frais de scolarité.

Article 9: Une heurecréditéeestuneunité de mesureacadémiqueéquivalente à uneheurethéoriqueou deux heures de pratique ou trois heures de (laboratoire/terrain/ateliers) pour un semestreacadémique entire. Une heurecréditéeéquivaut à 100 degrés.

Article 10: Pour obtenir un baccalauréat dans l'un des programmesspécialisésou disciplines décrits à l'article (1), l'étudiant(e) doit étudier avec succès 140 heurescréditées.

Article 11:L'étudiant(e) peuts'inscrire à des cours avec un minimum de 12 heurescréditées et un maximum de 21 heurescréditées pour un semestreacadémiquepourtantseulement 9 heurescréditées au maximum pour le semestred'été. Le Conseil de la Facultéa le droit de modifier cesmandats pour des raisons accéptables.

Article 12: Selon la recommandation du Comité de l'éducation et des affaires étudiantes, le Conseil de la Facultérépartit les étudiant(e)s inscrits aux membres du corps professoralen tant que conseillerspédagogiquesafind'identifier la tendance et l'orientation de l'étudiantvers le programme qui correspond à sesintérêtsacadémiques et à sasélection des cours. L'avis du conseillerpédagogiqueestconsidérécommeconsultatif et l'étudiantest le seulresponsable des coursens'yinscrivantselon son choix.

Article 13: À la fin de chaqueannéeacadémique, le Conseil de la Facultédétermine les différentsprogrammes et disciplines dans lesquelsl'étudiant(e) estautorisé(e) à poursuivreses études l'annéesuivante, en tenant compte des dispositions des articles n°2 et n°4.

Article 14: Les étudiant(e)s sontréparti dans les différentesprogrammesspécialisées et directives selonleur propre choix et la note cumuléeobtenuejusqu'à la fin du deuxièmeniveaud'études, et enfonction de son accomplissement des exigences nécessairesdéterminées par le conseil de chaquedépartement et approuvés par le Comité de l'Éducation et les recommandations du Conseil de la Faculté.

Article 15: Basé sur les décisions des conseils de différentdépartementsacadémiques, le Conseil de la Facultédétermine le système de répartition des notes pour chacun des examens finaux, pratiques et oraux et aussi pour le travail de l'année. La note de l'examen finale ne doit pas êtremoins de 60% du note totalepourtant la note de l'examen oral ne doit pas dépasser 30 % saufcertainscoursspécials, pour lesquels le Conseil de la Facultédétermine la note de l'examenécrit final.

Article 16: Les examens périodiquesorganisés par les conseils des départementsacadémiquesont lieu pendant chaquesemestrepourtant les examens oraux, pratiques et écritsont lieu à la fin du semestre. La périoded'examenthéorique pour est de deux heures.

Article 17: Chaqueétudiant(e) doit suivre les coursthéoriques et participe aux leçons pratiques, aux recherches et aux cercles de discussion, selon le systèmeapprouvé par le Conseil de la Faculté. L'étudiant(e) n'est pas autorisé(e) de passer l'examen final avantd'avoirsuivi au moins 75 % du nombre de leçons pratiques pour chaquecoursséparément. L'étudiant(e) estconsidéré(e) comme «raté(e)» dans les cours pour lesquels il/elles'est vu(e) refuserl'examen, à moinsqu'ilprésenteune excuse acceptable au Conseil de la Faculté, dans cecas, il/elleestconsidéré(e) comme «absent(e) avec une excuse acceptable».

Article 18: Les étudiant(e)s sontclassé(e)s au cours de leurs études pour obtenir un bacauleriaten sciences agronomiquesen quatre niveauxd'études:

- *Premier Niveau:* Il s'agitd'étudiant(e)s qui n'ont pas réussi 27 crédits.
- *DeuxièmeNiveau:* Il s'agitd'étudiant(e)s qui ontcomplété avec succès au moins 27 crédits.
- *TroisièmeNiveau:* Il s'agitd'étudiant(e)s qui ontterminé avec succès au moins 65 crédits.
- *Quatrièmeniveau:* Il s'agitd'étudiant(e)s qui ontterminé avec succès au moins 100 crédits.

Quant au programme de génieagricole, l'étudiant(e) estclassé(e) au cours de ses études comme il suit:

- *Premier Niveau*: Il s'agitd'étudiant(e)s qui n'ont pas réussi 29 crédits.
- *DeuxièmeNiveau:* Il s'agitd'étudiant(e)s qui ontcomplété avec succès au moins 29 crédits.
- *TroisièmeNiveau:* Il s'agitd'étudiant(e)s qui ontcomplété avec succès au moins 64 crédits.
- *Quatrièmeniveau:* Il s'agitd'étudiant(e)s qui ontterminé avec succès au moins 99 crédits.

La transition d'un niveau à un autre plus élèvé a lieu à la fin de l'annéeacadémique.

Article 19: À la fin d'uneactivitépédagogique, une note sous forme de lettreestattribuée à chaqueétudiant(e) qui y estinscrit(e), selon le barèmesuivant:

Pourcentage	GPA	Note	Mention
95% ou plus	de 3,7 à 4	A+	Excellent (+)
de 90 à <95%	de 3,4 à 3,7	A	Excellent
de 85 à <90%	de 3,1 à 3,4	A-	Excellent (-)
de 80 à <85%	de 2,8 à 3,1	B+	Très Bien (+)
de 75 à <80%	de 2,5 à 2,8	B	Très Bien
de 70 à <75%	de 2,2 à 2,5	C+	Bien (+)
de 65 à <70%	de 1,9 à 2,2	C	Bien
de 60 à <65%	de 1,6 à 1,9	D+	Passé (+)
de 55 à <60%	de 1,3 à 1,6	D	Passé
de 50 à <55%	de 1 à 1,3	D-	Passé (-)
> 50%	0,0	F	Échoué
> 30% en examen théorique	0,0	F-	Échouéen examen théorique
----------	0,0	AB*	Absent
----------	0,0	EX*	Excuse
----------	0,0	SR*	
----------	0,0	FW*	

Calcul des points de chaque matière entre dans le calcul de la moyenne cumulative selonl'équationsuivante:

{(m-50) x 0.06} + 1 = Course grade paints (CGP)

*m*est la note totaleobtenue de l'activitépédagogique

Exemple: **Si l'étudiant(e) aobtenuune note finale de 70%, les points de l'activitépédagogiquesontcalculéscomme le suivant:**

{(70-50) x 0.06} + 1 = 2.20 (Bien +)

Article 20: La moyenne cumulative estcalculée à la fin de chaqueannéeacadémique, ainsi que la note générale à l'obtention du diplômeenutilisant le mêmesystèmeutilisé pour calculer les notes des matières comme il suit:

Moyenne cumulative	Note	Mention
de 3,7000 à 4	A+	Excellent (+)
de 3,4000 à <3,6999	A	Excellent
de 3,1000 à <3,3999	A-	Excellent (-)
de 2,8000 à < 3,0999	B+	Très Bien (+)
de 2,5000 à < 2,7999	B	Très Bien
de 2,2000 à < 2,4999	C+	Bien (+)
de 1,9000 à < 2,1999	C	Bien
de 1,6000 à < 1,8999	D+	Passé (+)
de 1,3000 à < 1,5999	D	Passé
de 1 à < 1,2999	D-	Passé (-)

Le résultat de la multiplication du nombre de crédits de chaqueactivitépédagogiquemultiplié par les points correspondantesobtenues par l'étudiant(e), le résultatétant arrondi aux quatre chiffres après la virgule.

Exemple:

Un(e) étudiant(e) aobtenu les notes suivantes au cinq coursqu'il/elle a étudié au cours d'un semestre: 65, 80, 92, 64, 92 et leursheurscreditéessontrespectivement 3, 3, 3, 4, 4 et enconséquence, la moyennesemestrielle (SGPA) estcalculéecomme le suivant:
SGPA =

$$\frac{1.9 \text{ x } 3 \; + \; 2.8 \text{ x } 3 \; + \; 3.52 \text{ x } 3 \; + \; 1.84 \text{ x } 4 \; + \; 3.52 \text{ x } 4}{3 + 3 + 3 + 4 + 4}$$

= 2,7118 (Très Bien B)

Article 21: Le/la diplômé(e) reçoit un baccalauréathonorésI son mention estTrès Bien à condition que la moyenne cumulative ne soit pas moins de 2.5 à chaqueniveaud'étude et qu'il ne doit pas avoiréchoué à aucuncoursdurantses études universitaires.

Article 22: Un(e) étudiant(e) n'est pas autorisé(e) à étudier un courssiune exigence préalableestrequise à moinsqu'il/elleaitréussi(e) l'exigenceprécédente.

Article 23: Un(e) étudiant(e) qui échoue à un coursacadémiquepeut se réinscrire dans le mêmecours.

Article 24: Le Conseil de la Facultéconstitue des «cercles scientifiques» internes compris des professeurs des départementscontribués dans un mêmeprogramme pour présenter les affaires éducativesliées à ceprogramme. Afin de se prononcer sur celui-ci et le présenter au Comité de l'Éducation et des affaires étudiantespuis au Conseil de la Faculté.

Article 25: Le nombre minimum d'étudiant(e)s pour s'inscrire à un coursest de cinq étudiant(e)s, à condition que cecourssoitparmi les courspropposés par le département au semestre, et le Conseil de la Facultéa le droit de reconsidérercenombreenfonction des demandesgénérales.

Article 26: De nouveaux coursoptionelspeuventêtreajoutés à ceréglementou le contenu de tout courspeutêtremodifié avec l'approbation du Conseil de l'Université après avis du Conseil de la Faculté.

Article 27:L'étudiant(e) estinscrit(e) aux cours de son choix dans la limite des dispositions du présentrèglement et conformément aux décisionspropposées par les conseils des départementsconcernés au moins deux semainesavant le début de chaquesemestre, et le Conseil de la Faculté fixe les exigences et les demandes pour la mise enœuvre des lectures sur la base des règlements.

Article 28: Chaquedépartementétablitune description complète du contenu des coursenseignés, déjà approuvés par le Conseil de la Faculté et engagent des responsables de l'enseignement pour cescours. La modification du contenu de cescoursdemandel'approbation du le Conseil de la Faculté.

Article 29: Le Conseil de la Faculté, sur proposition du conseillerpédagogique, peutautoriser un(e) étudiant(e) à supprimer un ouplusieurscoursauxquels il/elleétaitinscrit, ou à ajouter tout autrecours dans les heures de crédit du semestre, dans les deux semainessuivant le début d'études au premier ou au deuxièmesemestreouen premier semaine du semestred'été.

Article 30: L'étudiant(e) de quatrième cycle sera diplômé(e) après proclamation des résultats des examens du premier ou du second semestre (semestred'automneousemestre de printemps) encas de réussite de l'étudiant(e) dans tous les coursacadémiquesselonl'article (10). Avec un maximum de 8 heures-crédits, il peut se présenter à un examen ensemestred'été et obtenir son diplômeenaoût, s'ilréussittouscescoursinscrits, comptetenu des dispositions de l'article (10).

Article 31: Pour obtenir un Baccalureat de la Faculté, les étudiantsdoiventréussissent dans les coursobligatoireoffertmandatoirement

Tableau 1: Les coursobligatoires à tous les étudiant(e)s de la Faculté

Code du cours	Titre du cours	Thèrorie	Pratique	Céredit
30100	Droits d'Homme	2	-	-
30110	Langue anglaise - Géneral	2	-	2
30220*	Introduction à l'ordinateur	-	2	-
30399	Entrainementsépecial	-	6	2
30400	Planification et Organization du Projet Finale	1	-	1
30401	Project Finale	-	6	2
30410	Langue anglaise - Rédactionscientifique	2	-	2

** Pour les étudiant(e)s du section scientifiqueseulement.*

Article 32: Les étudiant(e)s doiventchoisir un des courssuivantcomme un exigence universitaire.

Code du cours	Titre du cours	Thèrorie	Pratique	Céredit
30411	CréativiteArtistique	2	-	2
30412	Culture Sportive	2	-	2
30413	Tourisim et Societé	2	-	2
30414	Premier Aide	2	-	2
30415	Argumentation	2	-	2
30416	L'Homme et l'Environement	2	-	2
30417	Santé Reproductive	2	-	2

Article 33: Des programmesd'étudesparallèlespeuventêtreétablis pour certainsétudiant(e)s de la Facultléafind'étudierenanglaisouenfrançais dans un ouplusieurs des programmes et disciplines mentionnés aux articles n°3 et n°4 du présentrèglement et conformément aux mêmesréglements des études rattachées suite à la demande de la Facultlé et après approbation du Conseil de l'Université et du Conseil Sûprime des Universités, après avoirdéfini les conditions exigentes des étudiant(e)s qui serontinscrit(e)s dans cesprogrammes.

Article 32: L'étudiant(e) estsoumis aux règlementsgénéraux de l'Université et de la Facultléen matière de régime d'études, d'avertissement, de renvoi, de possibilités de réinscription, des excuses acceptables, de suspension d'inscription, et à toutes les règles, lois et règlementscontenus dans la loiorganisatrice des universités et sesrèglementsd'application.

Article 35: Les dispositions du présentrèglements'appliquent à compter de l'annéeacadémiquesuivante la date de son accréditation, aux nouveaux étudiant(e)s et à ceuxrestant(e)s enréinscriptionen première année.

Chapter III

Courses for the Agriculture Science Program

Article (36): Mandatory courses for the first level students of agriculture sciences programs (Tables 3 & 4).

Table (3): Mandatory courses for the first level (First semester)

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
03101	**Principles of Economics**	**2**	**-**	**2**	**-**
04101	**Principles of Home Economics**	**2**	**-**	**2**	**-**
05101	**Principles of Mathematics**	**1**	**2**	**2**	**-**
07101	**Principles of Botany**	**2**	**3**	**2**	**-**
11101	**Principles of General Zoology**	**2**	**3**	**3**	**-**
17101	**Principles of Physical Chemistry**	**2**	**3**	**3**	**-**
18101	**Principles of Rural Sociology**	**1**	**2**	**2**	**-**
***30100**	**Human Rights**	**2**	**-**	**-**	**-**

* The result is declared as "Pass" or "Fail".

Table (4): Mandatory courses for the first level (Second semester)

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
03102	**Principles of Agricultural Economics**	**2**	**-**	**2**	**-**
07102	**Plant Kingdom**	**1**	**3**	**2**	**-**
11102	**Principles of Entomology**	**2**	**3**	**3**	**-**
17102	**Principles of Organic Chemistry**	**2**	**3**	**3**	**-**
17103	**Principles of Analytical Chemistry**	**1**	**3**	**2**	**-**
20101	**Principles of Genetics**	**2**	**2**	**3**	**-**
30110	**English Language**	**2**	**-**	**2**	**-**

Article (37): Mandatory and elective courses for the second level students of agriculture sciences programs (Tables 5, 6 & 7).

Table (5): Mandatory courses for the second level (First semester)

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
02201	**Principles of Forestry and Wood Technology**	**2**	**2**	**3**	**-**
08201	**Principles of Animal Production**	**2**	**2**	**3**	**-**
09201	**Principles of Poultry Production**	**2**	**2**	**3**	**-**
14201	**Fundamentals of Soil Science**	**2**	**2**	**3**	**-**
19211	**Principles of Field Crop Production**	**2**	**2**	**3**	**-**

Table (6): Elective courses for the second level (First semester) *

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
07201	**Microbiology**	**1**	**3**	**2**	**07102**
33202	**Agricultural Microbiology**	**2**	**-**	**2**	**07102**

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
15201	**Principals of Biochemistry**	**2**	**-**	**2**	**-**
33203	**Principles of Agricultural Biochemistry**	**2**	**-**	**2**	**-**

*The student must study one course (2 credit hours) from each of the two groups.

Table (7): Mandatory Courses for the second level (Second semester)

Course Code	Course Name	Theoretical	Applied-Practical	Credit Hours	Prerequisite
01201	**Agricultural Extension Communications**	**2**	**2**	**3**	**-**
06201	**Basics of Dairy Science**	**2**	**2**	**3**	**-**
12201	**Principles of Vegetable Crops Production**	**2**	**2**	**3**	**-**
13201	**Principles of Floriculture and Landscape Gardening**	**2**	**2**	**3**	**-**
15202	**Principals of Food Processing and Preservation**	**2**	**2**	**3**	**-**
16201	**Principles of Fruit Crops Production**	**2**	**2**	**3**	**-**
30220	**Introduction to Computer Science***	**-**	**2**	**-**	**-**

*The student succeeds in this course by attending at least 75% of the lessons offered.

First: Plant Production Program

The student in the plant production program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Forestry and Wood Technology	**29**	**2**	**44**	**12**	**35**	**18**
Vegetable Crops	**29**	**2**	**44**	**12**	**35**	**18**
Floriculture, Ornamental Horticulture and Landscape Gardening	**29**	**2**	**44**	**12**	**35**	**18**
Pomology	**29**	**2**	**44**	**12**	**35**	**18**
Crop Science	**29**	**2**	**44**	**12**	**35**	**18**

Third Level Courses

Article (38): Mandatory courses for students in the 3rd level, Plant Production Program are presented in Table (8).

Table (8): Mandatory courses for 3rd level students [Plant Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12301	**Production of Vegetable Crops**	**1**	**2**	**2**	**3**	**12201**
16302	**Agricultural Practices in the Production of Fruit Crops**	**1**	**2**	**2**	**3**	**16201**
19315	**Statistics and Experimental Designs**	**1**	**2**	**2**	**3**	**--**
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	
13304	**Production & Circulation of Medicinal and Aromatic Plants**	**2**	**2**	**2**	**3**	**13201**
19311	**Production of Field Crops in Egypt**	**2**	**2**	**2**	**3**	**19211**
30399	**Field Training- (Within the Plant Production Program)**	**2**	**-**	**6**	**2**	**--**

Article (39): Mandatory and elective courses for students of the 3rd in the Plant Production Program (Tables 9, 10 & 11)

Table (9): Mandatory courses for 3rd level students [Plant Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02302	**Wood structure and the principles of wood identification**	**1**	**2**	**2**	**3**	**02201**
02308	**Silviculture and Trees Investment**	**1**	**2**	**2**	**3**	**02201**
12302	**Protected Vegetable Cultivation**	**1**	**2**	**2**	**3**	**12201**
12303	**Physiology of Vegetable Crops**	**1**	**2**	**2**	**3**	**12201**
13303	**Groups of Flowers and Ornamental Plants**	**1**	**2**	**2**	**3**	**13201**
13305	**Nurseries, Greenhouses and Commercial Farms**	**1**	**2**	**2**	**3**	**13201**
16300	**Propagation of Fruit Crops**	**1**	**2**	**2**	**3**	**20101**
16301	**Physiology of Fruit Crops**	**1**	**2**	**2**	**3**	**16201**
19316	**Plant Breeding**	**1**	**2**	**2**	**3**	**19211**
19321	**Seed Production and Quality**	**1**	**2**	**2**	**3**	**19211**

The student must study two courses (total of 6 credit hours) from this table according to his/her specialization.

Table (10): General elective courses for 3rd level students [Plant Production Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14402	**Soil Fertility**	**1**	**2**	**2**	**3**	**14201**
14309	**Land Reclamation and Improvement**	**1**	**2**	**2**	**3**	**14201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05359	**Agricultural Engineering and Surveying**	**2**	**2**	**2**	**3**	**--**
05458	**Advanced Irrigation Methods**	**2**	**2**	**2**	**3**	**--**

*The student must study one course (3 credit hours) from each of the two groups.

Table (11): Specialization elective courses for students of 3rd level [Plant Production Program] *

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02303	**Forest Genetics**	**2**	**2**	**2**	**3**	**02201**
02310	**Wood Production and Seasoning**	**2**	**2**	**2**	**3**	**02201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12304	**Production of Root, Tuberous and Bulb Vegetables**	**2**	**2**	**2**	**3**	
12305	**Production of Non-Traditional Vegetable Crops**	**2**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13306	**Production of Economic and Exported Ornamental Plants**	**2**	**2**	**2**	**3**	**13201**
13308	**Lawns and Ground Covers**	**2**	**2**	**2**	**3**	**13201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16303	**Precision Agriculture in Fruit Crops**	**2**	**2**	**2**	**3**	
16304	**Climate and Environmental Changes and its Impact on Fruit Crops.**	**2**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19317	**Biotechnology and its Applications in Field Crops Improvement**	**2**	**2**	**2**	**3**	**02201**
19318	**Cultivation of Deserts and Dry Lands**	**2**	**2**	**2**	**3**	**02201**

* The student must study one course (3 credit hours) from each group in each table, according to his/her specialization.

Fourth Level Courses

Article (40): Mandatory and elective courses for students in the 4th level in the Plant Production Program (Tables 12 & 13)

Table (12): Mandatory courses for 4th level students [Plant Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
31401	**Biotechnology in Plant Production**	**1**	**2**	**2**	**3**	**--**
31402	**Nanotechnology Applications in Plant Production**	**1**	**2**	**-**	**2**	**--**
30400	**Designing and Planning of a Graduation Project**	**1**	**1**	**-**	**1**	**--**
02402	**Growing and Developing Woody Trees**	**2**	**2**	**2**	**3**	**--**
31403	**Quality Control Systems for Agricultural Crops**	**2**	**2**	**--**	**2**	**--**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**30400**
30410	**English Language (Scientific Writing)**	**2**	**2**	**--**	**2**	**30110**

Table (13): Elective courses for 4th level students [Plant Production Program] *

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07302	**General Plant Pathology**	**1**	**2**	**2**	**3**	**--**
17415	**Pesticides and Plant Pest Control**	**1**	**2**	**2**	**3**	**--**

* The student must study one course (3 credit hours).

Article (41): Elective courses for students of the 4th level in the Plant Production Program (Tables 14, 15, 16, 17&18).

Table (14): Elective courses for 4th level students [Plant Production Program] Forestry and Wood Technology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02401	**Wood Physical and Mechanical Properties**	**1**	**2**	**2**	**3**	**02201**
02403	**Wood Preservation**	**1**	**2**	**2**	**3**	**--**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02404	**Forest Ecology**	**1**	**2**	**2**	**3**	
02410	**Physiology of Timber Trees**	**1**	**2**	**2**	**3**	**02201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02405	**Non-Wood Forest Products**	**2**	**1**	**2**	**2**	
02413	**Forest Mensuration and Principles of Forest Sampling**	**2**	**1**	**2**	**2**	**02201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02411	**Forest Photogrammetry**	**2**	**2**	**2**	**2**	**02201**
02415	**Forest and Range Management**	**2**	**2**	**2**	**2**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02406	**Wood Microstructure**	**2**	**1**	**2**	**2**	**--**
02414	**Wood Industrial and Wood Products Technology**	**2**	**1**	**2**	**2**	**02201**

*The student must study one course from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Table (15): Elective courses for 4th level students [Plant Production Program]
Vegetable Crops specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12402	**Management of Vegetable Crops in the New Lands**	**1**	**2**	**2**	**3**	
12403	**Soilless Culture for Vegetable Crops**	**1**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12404	**Breeding of Vegetable Crops**	**1**	**2**	**2**	**3**	
12405	**Breeding of Vegetable Crops for Environmental Stresses Tolerance**	**1**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12410	**Selected Topics in Vegetable Production Technology**	**2**	**2**	**-**	**2**	
12411	**Advanced Scientific Research in the Production of Vegetable**	**2**	**2**	**-**	**2**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12406	**Production of Fruit and Leafy Vegetables**	**2**	**1**	**4**	**3**	
12407	**Seed Production of Vegetable Crops**	**2**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
12408	**Postharvest Treatments for Vegetable Crops**	**2**	**2**	**2**	**3**	**--**
12409	**Production of Organic Vegetables**	**2**	**2**	**2**	**3**	**--**

*****The student must study one course from each group in each table, in addition to the university required course (two credit hours) from Table 2 (first semester)

Table (16): Elective courses for 4th level students [Plant Production Program]

Floriculture, Ornamental Horticulture and Landscape Gardening specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13401	**Landscape Designing**	**1**	**2**	**2**	**3**	**13201**
13403	**Physiology of Ornamental Plants**	**1**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13405	**Uses of Medicinal and Aromatic Herbs and Their Active Ingredients**	**1**	**2**	**2**	**3**	**13201**
13407	**Uses of Plants in Landscape Design**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13402	**Flower Arrangement and Interior Design**	**2**	**1**	**2**	**2**	**---**
13404	**Trading and Storing of Flowers and Ornamental Plants**	**2**	**1**	**2**	**2**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13406	**Breeding of Flowers and Ornamental Plants**	**2**	**2**	**2**	**3**	**---**
13408	**Tissue Culture and Biotechnology of Ornamental Plants**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13410	**Landscape of Cities and Villages**	**2**	**2**	**2**	**3**	**13403**
13412	**Classification of Ornamental Plants**	**2**	**2**	**2**	**3**	**13201**

*The student must study one course from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester)

Table (17): Elective courses for 4th level students [Plant Production Program]
Pomology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16401	**Postharvest Physiology**	**1**	**2**	**2**	**3**	**16201**
16402	**Growth Regulators and their Applications in Fruit Crops**	**1**	**2**	**2**	**3**	**16201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16403	**Cultivation and Production of Citrus**	**1**	**2**	**2**	**3**	**16201**
16404	**Water and Fertilizer Requirements for Fruit Crops**	**1**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16405	**Organic and Sustainable Production of Fruit Crops**	**2**	**1**	**2**	**2**	**16201**
16406	**Postharvest Technology**	**2**	**1**	**2**	**2**	**--**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16407	**Intercropping in Fruit Crops**	**2**	**2**	**2**	**3**	
16408	**Cultivation and Production of Grapes**	**2**	**2**	**2**	**3**	

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
16409	**Breeding and Improving of Fruit Crops**	**2**	**2**	**2**	**3**	
16410	**Biochemistry and Molecular Biology in Fruit crops**	**2**	**2**	**2**	**3**	

*The student must study one course from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Table (18): Elective courses for 4th level students [Plant Production Program]
Field Crop Science specialization *

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19412	**Field Crops Physiology**	**1**	**2**	**2**	**3**	**19211**
19415	**Weed Biology and Control**	**1**	**2**	**2**	**3**	**19211**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19413	**Field Crops Taxonomy**	**1**	**2**	**2**	**3**	**19211**
19416	**Field Crops Ecology**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19417	**Technology and Quality of Cereals and Food Legumes**	**2**	**1**	**2**	**2**	**---**
19418	**Production of Unconventional crops**	**2**	**1**	**2**	**2**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19422	**Topics in Breeding of Important Field Crops**	**2**	**2**	**2**	**3**	**19316**
19423	**Breeding and Improvement of Cereal and Forage Crops**	**2**	**2**	**2**	**3**	**19316**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
19419	**Production and Quality of Forage and Pasture Crops**	**2**	**2**	**2**	**3**	**19311**
19420	**Fiber Crops, Production and Technology**	**2**	**2**	**2**	**3**	**19311**

*The student must study one course from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Second: Animal Production Program

The student in the animal production program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Animal Production	**29**	**2**	**47**	**9**	**32**	**21**
Poultry science	**29**	**2**	**47**	**9**	**32**	**21**

Third Level Courses

Article (42): Mandatory courses for students of the 3rd level in the Animal Production Program are presented in Table (19).

Table (19): Mandatory courses for 3rd level students [Animal Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08306	**Fish Production and Management**	**1**	**2**	**2**	**3**	**---**
09304	**Egg production and Hatchery**	**1**	**2**	**2**	**3**	**09201**
19326	**Forage crops for Farm Animals and Poultry**	**1**	**2**	**2**	**3**	**---**
32301	**Principles of Statistics**	**2**	**2**	**2**	**3**	**---**
30399	**Field Training (Within the Animal Production Program)**	**2**	**-**	**6**	**2**	**---**

Table (20): General elective courses for 3rd level students [Animal Production Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09309	**Poultry Farms Management**	**2**	**2**	**2**	**3**	**09201**
09310	**Quality of Poultry Products**	**2**	**2**	**2**	**3**	**09201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15301	**Chilling, Freezing and Drying of Food Technology**	**2**	**2**	**2**	**3**	**15202**
15303	**Animal, Fishery and Poultry Food Technology**	**2**	**2**	**2**	**3**	**15202**

*The student must study one course (3 credit hours) from each group in each table.

Article (43): Mandatory and elective courses for students of the 3rd level in the Animal Production Program, Animal Production specialization are presented in Tables (21 & 22).

Table (21): Mandatory courses for 3rd level students [Animal Production Program] Animal Production specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08301	**Farm Animal Physiology**	**1**	**2**	**2**	**3**	**08201**
08302	**Nutrition of Farm Animals**	**1**	**2**	**2**	**3**	**08201**
08304	**Breeding of Farm Animals**	**1**	**2**	**2**	**3**	**08201**

Table (22): Elective courses for 3rd level students [Animal Production Program]

Animal Production specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08308	**Animal Nutrition and Metabolism**	**2**	**2**	**2**	**3**	**08201**
08309	**Principles of Chemistry of Nutrition**	**2**	**2**	**2**	**3**	**08201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08310	**Physiology of Adaptation, Growth and Development**	**2**	**2**	**2**	**3**	**08201**
08324	**Physiology of Blood, Body Fluids and Blood Circulation**	**2**	**2**	**2**	**3**	**08201**

*The student must study one course (3 credit hours) from each group in each table.

Article (44): Mandatory and elective courses for students of the 3rd level in the Animal Production Program, Poultry Production specialization are presented in Tables (23 & 24).

Table (23): Mandatory courses for 3rd level students [Animal Production Program] Poultry Production specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09301	**Genetics of Traits in Poultry**	**1**	**2**	**2**	**3**	**09201**
09302	**Poultry Nutrition Chemistry**	**1**	**2**	**2**	**3**	**09201**
09303	**Poultry Physiology**	**1**	**2**	**2**	**3**	**09201**

Table (24): Elective courses for 3rd level students [Animal Production Program]
Poultry Production specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09305	**Farms of Broiler Breeders and Broilers**	**2**	**2**	**2**	**3**	**09201**
09306	**Meat Production**	**2**	**2**	**2**	**3**	**09201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09307	**Production of Table Eggs**	**2**	**2**	**2**	**3**	**09201**
09308	**Breeding for Egg Production**	**2**	**2**	**2**	**3**	**09201**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (45): Mandatory and elective courses for students of the 4th level in the Animal Production Program are presented in Tables (25 & 26).

Table (25): Mandatory courses for 4th level students [Animal Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
32401	**Biotechnology and its Applications in Animal and Poultry Production Fields**	**2**	**2**	**2**	**3**	**20101**
30400	**Designing and Planning of a Graduation Project**	**1**	**1**	**-**	**1**	**---**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**30400**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Table (26): Elective courses for 4th level students [Animal Production Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05456	**Mechanization of Livestock and Poultry farms**	**1**	**2**	**2**	**3**	**---**
05457	**Building of Livestock and Poultry Farms**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03403	**Economics of Animal, Fisheries and Poultry Production**	**2**	**2**	**2**	**3**	**---**
03418	**Feasibility Studies of Agricultural Projects**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08414	**Production of Dairy Cattle**	**2**	**2**	**2**	**3**	**---**
08416	**Production of Sheep and Goats**	**2**	**2**	**2**	**3**	**---**

*The student must study one course from each group in each table.

Article (46): Mandatory and elective courses for students of the 4th level in the Animal Production Program, Animal Production specialization are presented in Tables (27 & 28).

Table (27): Mandatory courses for 4th level students [Animal Production Program] Animal production specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08401	**Formulation of Rations and Animal Feeding**	**1**	**2**	**2**	**3**	**08201**
08402	**Physiology of Reproduction and Milk Secretion**	**1**	**2**	**2**	**3**	**08201**
08439	**Heath of Farm Animals**	**2**	**2**	**2**	**3**	**08201**

Table (28): Elective courses for 4th level students [Animal Production Program] Animal Production specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08426	**Management of Dairy Cattle**	**1**	**2**	**2**	**3**	**08201**
08427	**Production of Meat, Carcasses and Cuts**	**1**	**2**	**2**	**3**	**08201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08404	**Genetics of Farm Animals**	**2**	**2**	**2**	**3**	**20101**
08417	**Modern Techniques in Animal Breeding**	**2**	**2**	**2**	**3**	**20101**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (47): Mandatory and elective courses for students of the 4th level in the Animal Production Program, Poultry Production specialization are presented in Tables (29 & 30).

Table (29): Mandatory courses for 4th level students [Animal Production Program] Poultry Production specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09401	**Genetic Improvement in Poultry**	**1**	**2**	**2**	**3**	**09301**
09402	**Environmental and Production Physiology**	**1**	**2**	**2**	**3**	**09303**
09411	**Diseases and Health of Poultry**	**2**	**2**	**2**	**3**	**09201**

Table (30): Elective courses for 4th level students [Animal Production Program] Poultry Production specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09405	**Farms and Poultry Enterprises**	**1**	**2**	**2**	**3**	**09201**
09406	**Secondary Birds and Rabbits**	**1**	**2**	**2**	**3**	**09201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09403	**Non-nutritional Feed Additives and Feed Formulation**	**2**	**2**	**2**	**3**	**09302**
09404	**Non-Traditional Feedstuff**	**2**	**2**	**2**	**3**	**09302**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Third: Food Science Program

The student in the food science program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Dairy Science and Technology	**29**	**2**	**47**	**9**	**32**	**21**
Food science and Technology	**29**	**2**	**47**	**9**	**32**	**21**

Third Level Courses

Article (48): Mandatory courses for students of the 3rd level in the Food Science Program are presented in Table (31).

Table (31): Mandatory courses for 3rd level students [Food Science Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
33351	**Food and Dairy Safety**	**1**	**2**	**3**	**3**	**---**
33353	**Sensory and Physical Properties of Food and Dairy Products**	**1**	**2**	**3**	**3**	**15202**
19315	**Statistics and Experimental Designs**	**1**	**2**	**2**	**3**	**--**
33352	**Biotechnology in Food and Dairy**	**2**	**2**	**3**	**3**	**20101**
30399	**Field Training- (Within the Food Science Program)**	**2**	**-**	**6**	**2**	**---**

Table (32): Mandatory courses for 3rd level students [Food Science Program]
Dairy Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06301	**Technology of Market and Fermented Milk**	**1**	**2**	**3**	**3**	**06201**
06302	**Dairy Microbiology**	**1**	**2**	**3**	**3**	**06201**
06307	**Chemistry of Milk and its Products**	**2**	**2**	**3**	**3**	**06201**

Table (33): Elective courses for 3rd level students [Food Science Program]
Dairy Technology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06303	**Milk Secretion and Production**	**1**	**2**	**2**	**3**	**06201**
06304	**Microbial Toxins and Environmental Pollutants in Milk and Milk products**	**1**	**2**	**2**	**3**	**06201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06305	**Technology of Dried and Condensed Milk**	**2**	**2**	**2**	**3**	**06201**
06306	**Manufacture of Various Dairy Products**	**2**	**2**	**2**	**3**	**--**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03327	**Economics of Agro-Industries**	**2**	**2**	**2**	**3**	**---**
05451	**Physical Properties of Agricultural Materials**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05356	**Agricultural Process Engineering**	**2**	**2**	**2**	**3**	**---**
05357	**Equipment and Machines of Food Line Production**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table.

Article (50): Mandatory and elective courses for students of the 3rd level in the Food Science Program, Food Science and Technology specialization are presented in Tables (34 & 35).

Table (34): Mandatory courses for 3rd level students [Food science Program]
Food Science and Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15301	**Food Preservation Technology Using Chilling, Freezing and Drying**	**1**	**2**	**3**	**3**	**15202**
15306	**Food chemistry**	**1**	**2**	**3**	**3**	**15201**
15307	**Food analysis**	**1**	**2**	**3**	**3**	**15201**

Table (35): Elective courses for 3rd level students [Food science Program]
Food Science and Technology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15302	**Meat & Fish and its Products Technology**	**1**	**2**	**3**	**3**	**15202**
15304	**Cereal and its Products Technology**	**1**	**2**	**3**	**3**	**15202**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15308	**Biochemistry (applied)**	**2**	**2**	**3**	**3**	**15201**
15310	**Proteins, Carbohydrates and Lipids Biochemistry**	**2**	**3**	**-**	**3**	**15201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03327	**Economics of Agro-Industries**	**2**	**2**	**2**	**3**	**---**
05356	**Agricultural Process Engineering**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17310	**Advanced Organic Chemistry**	**2**	**2**	**3**	**3**	**17102**
17410	**Advanced Analytical Chemistry**	**2**	**2**	**3**	**3**	**17103**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (51): Mandatory and elective courses for students of the 4th level in the Food Science Program, Food Science and Technology specialization are presented in Tables (36 & 37).

Table (36): Mandatory courses for 4th level students [Food Science Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
33451	**Food and Dairy Quality Control**	**1**	**2**	**3**	**3**	**---**
30400	**Design and Planning of Graduation Project**	**1**	**1**	**-**	**1**	**---**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Table (37): Elective courses for 4th level students [Food Science Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
33452	**Sanitation in Food and Dairy Plants**	**2**	**3**	**-**	**3**	**---**
33453	**Standards, Laws and Regulations for Food and Dairy**	**2**	**3**	**-**	**3**	**---**
33455	**Technology of Secondary Products and Residues in Food and Dairy**	**2**	**2**	**3**	**3**	**---**
33457	**Packing and Packaging of Food and Dairy Products**	**2**	**2**	**3**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (52): Mandatory and elective courses for students of the 4th level in the Food Science Program, Dairy Science and Technology specialization are presented in Tables (38 & 39).

Table (38): Mandatory courses for 4th level students [Food Science Program]
Dairy Science and Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06401	**Technology of Cheese**	**1**	**1**	**6**	**3**	**06201**
06405	**Chemical Analysis of Milk and its Products**	**1**	**2**	**3**	**3**	**06201**

Table (39): Elective courses for 4th level students [Food Science Program]*
Dairy Science and Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06403	**Fat Products and Ice Cream**	**1**	**2**	**3**	**3**	**06201**
06404	**Food Additives in Dairy Manufacturing**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03418	**Feasibility Studies of Agricultural Projects**	**1**	**2**	**2**	**3**	**---**
17410	**Advanced Analytical Chemistry**	**1**	**2**	**3**	**3**	**17103**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06402	**Applied dairy microbiology and its products**	**2**	**2**	**3**	**3**	**06201**
06406	**Processed Cheese**	**2**	**2**	**3**	**3**	**06201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06407	**Functional Dairy Products**	**2**	**2**	**3**	**3**	**06201**
06408	**Dairy by-Products**	**2**	**2**	**2**	**3**	**06201**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (53): Mandatory and elective courses for students of the 4th level in the Food Science Program, Food Science and Technology specialization are presented in Tables (40 & 41).

Table (40): Mandatory courses for 4th level students [Food Science Program]
Food Science and Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15401	**Human Nutrition**	**1**	**3**	**-**	**3**	**15202**
15402	**Food Microbiology**	**1**	**2**	**3**	**3**	**15202**
15407	**Heat Preservation Technology and Nontraditional Methods**	**2**	**2**	**3**	**3**	**---**

Table (41): Elective courses for 4th level students [Food Science Program]*
Food Science and Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15405	**Sugar and its Products Technology**	**1**	**3**	**-**	**3**	**15202**
15497	**Recent Developments in Food Science and Technology Sector**	**1**	**1**	**6**	**3**	**15202**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14308	**Colloidal Properties**	**1**	**1**	**1**	**3**	**14201**
16401	**Postharvest Physiology**	**1**	**2**	**2**	**3**	**16201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15408	**Oils and Fats its Products Technology**	**2**	**3**	**-**	**3**	**---**
15410	**Industrial Fermentation**	**2**	**2**	**3**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Programme des Sciences Alimentaires

L'étudiant(e) du programme de sciences de l'alimentationétudie 140 heures-crédits au baccalauréat, répartiesselon le tableau suivant:

Cheminement	Sciences Fondamentales		Sciences AgricolesFondamentales &Générales		Sciences AgricolesSpécialisées	
	Obligatoire	Facultative	Obligatoire	Facultative	Obligatoire	Facultative
Science Alimentaire	29	2	47	9	32	21
TechnologieLaitière	29	2	47	9	32	21

Cours du 3ème niveau

Article 48: Les coursobligatoires au troisièmeniveauuniversitaire (Tableau 31)

Tableau 31: Coursgénérauxobligatoires pour les étudiant(e)s du troisièmeniveau - Programme des Sciences Alimentaires

Code	Titre du Cours	Semestre	Théorie	Pratique	Crédit	CoursPrérequis
33351	**Sécuritéalimentaire et laitière**	**1**	**2**	**3**	**3**	**-**
33353	**Propriétéssensorielles et naturelles des aliments et des produitslaitiers**	**1**	**2**	**3**	**3**	**15202**
19315	**Statistiques et plan d'expériences**	**1**	**2**	**2**	**3**	**-**
33352	**Biotechnologie dans le domaine de l'alimentation et des produitslaitiers**	**2**	**2**	**3**	**3**	**20101**
30399	**Stage sur terrain (spécialisée) dans le domaine des sciences de l'alimentation**	**2**	**-**	**6**	**2**	**-**

Article 49: Coursobligatoires et facultatifs pour les étudiant(e)s du troisièmeniveauProgramme du Sciences Alimentaires - Cheminement: TechnologieLaitière (Tableaux 32 et 33)

Tableau 32: Coursobligatoires pour les étudiant(e)s du troisièmeniveau - Programme des Sciences Alimentaires - Cheminement: TechnologieLaitière

Code	Nom du cours	Semestre	Théorie	Pratique	Crédit	CoursPrérequis
06301	**Technologie des laits de**	**1**	**2**	**3**	**3**	**06201**
06302	**Microbiologie du lait**	**1**	**2**	**3**	**3**	**06201**
06307	**Chimie du lait et des**	**1**	**2**	**3**	**3**	**06201**

Tableau 32: Cours facultative pour les étudiant(e)s du troisièmeniveau - Programme des Sciences Alimentaires - Cheminement: TechnologieLaitière

Code	Nom du cours	Semestre	Théorie	Pratique	Crédit	CoursPrérequis
03327	**Économieagro-industrielle**	**2**	**2**	**3**	**3**	**-**
05451	**Propriétésnaturelles des aliments**	**2**	**2**	**3**	**3**	**-**
05336	**Génie des procédésalimentaires**	**2**	**2**	**3**	**3**	**-**
05337	**Machines et équipements pour les lignes de production**	**2**	**2**	**3**	**3**	**-**

*L'étudiantchoisit un seulcours de 3 crédits de chaquegroupe.

Article 50: Coursobligatoires et facultatifs pour les étudiant(e)s du troisièmeniveauProgramme du Sciences Alimentaires - Cheminement: TechnologieLaitière (Tableaux 32 et 33)

Cours de 4ème niveau

Article 51: Les coursobligatoires et facultatives pour les étudiant(e)s de quatrièmeniveau (Tableaux 36 et 37)

Tableau (36): Coursgénérauxobligatoires pour les étudiant(e)s de quatrièmeniveau - Programme du Sciences Alimentaires

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	CoursPrérequis
33451	**Contrôle de la Qualité des Aliments et des ProduitsLaitiers**	**1**	**2**	**3**	**3**	**-**
30400	**Conception et Planification du**	**1**	**1**	**-**	**1**	**-**
30401	**Projet de Fin d'Étude**	**2**	**-**	**6**	**2**	**-**
30410	**Langue Anglaise**	**2**	**2**	**-**	**2**	**30110**

Tableau (37): Coursfacultatifs pour les étudiants de quatrièmeniveau - Programme des Sciences Alimentaires

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	CoursPrérequis
33452	**Règlementsanitaires dans les usinesalimentaires et laitières**	**2**	**3**	**-**	**3**	**-**
33453	**Spécifications standards, lois et législationsconcernant les alimentaires et les produitslaitières**	**2**	**3**	**-**	**3**	**-**
33455	**Technique des sous-produits et résidus dans les aliments et les produitslaitiers**	**2**	**2**	**3**	**3**	**-**
33457	**Emballages des produitsalimentaires et laitiers**	**2**	**2**	**3**	**3**	**-**

Article 52: Coursobligatoires et facultatifs pour les étudiants de quatrième cycle, programmes des Sciences Alimentaires - Cheminement: TechnologieLaitière (Tableaux: 38 et 39)

Tableau (38): Coursobligatoires pour les étudiants de quatrième cycle, programmes des Sciences Alimentaires - Cheminement: TechnologieLaitière)

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	Prérequis
06401	**Technologie du Fromage**	**1**	**1**	**6**	**3**	**06201**
06405	**AnalyseChimique du Lait et sesProduits**	**1**	**2**	**3**	**3**	**06201**

Tableau (39): Coursfacultatifs pour les étudiants de quatrième cycle, programmes des Sciences Alimentaires - Cheminement: TechnologieLaitière)

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	Prérequis
06403	**Produits Gras et Glaces**	**1**	**2**	**3**	**3**	**06201**
06404	**AdditifsAlimentaires dans les Industries Laitières**	**1**	**2**	**3**	**3**	**06201**

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	Prérequis
03418	**Études de Faisabilité de ProjetsAgricoles**	**1**	**2**	**3**	**3**	**-**
17410	**ChimieAnalytiqueAvancée**	**1**	**2**	**3**	**3**	**17103**

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	Prérequis
06402	**Applications Microbiologiques du Lait et des ProduitsLaitiers**	**2**	**2**	**3**	**3**	**06201**
06406	**Fromage Fondu**	**2**	**2**	**3**	**3**	**06201**

Code	Titre du cours	Semestre	Théorie	Pratique	Crédit	Prérequis
06407	**ProduitsLaitiersFonctionnels**	**2**	**2**	**3**	**3**	**06201**
06408	**Sous-produits du Lait**	**2**	**2**	**3**	**3**	**06201**

* L'étudiant(e) doit choisir un seulcours (de 3 crédits) de chaquegroupe du tableau 39, en plus d'un cours (de 2 crédits) exigé par l'Université (Tableau 2) pour le premier semestre.

Fourth: Plant Protection Program

The student in the plant protection program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Plant Pathology	**29**	**2**	**47**	**9**	**32**	**21**
Applied Entomology	**29**	**2**	**47**	**9**	**32**	**21**
Pesticide Chemistry & Technology	**29**	**2**	**47**	**9**	**32**	**21**

Third Level Courses

Article (54): Mandatory courses for students of the 3rd level in the Plant Protection Program are presented in Table (42).

Table (42): Mandatory courses for 3rd level students [Plant Protection Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07302	**General Plant Pathology**	**1**	**2**	**2**	**3**	**---**
11301	**Economic Entomology**	**1**	**2**	**2**	**3**	**11102**
19315	**Statistics and Experimental Design**	**1**	**2**	**2**	**3**	**---**
17306	**General Pesticides**	**2**	**2**	**2**	**3**	**---**
30399	**Field Training (Within the Plant Protection Program)**	**2**	**-**	**6**	**2**	**---**

Article (55): Mandatory and elective courses for students of the 3rd level in the Plant Protection Program, Plant Pathology specialization are presented in Tables (43 & 44).

Table (43): Mandatory courses for 3rd level students [Plant Protection Program]
Plant Pathology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07303	**Methodology of Plant Pathology**	**1**	**2**	**1**	**3**	**---**
07304	**Plant Virus Diseases**	**1**	**2**	**1**	**3**	**---**
07305	**Bacterial Plant Diseases**	**1**	**2**	**1**	**3**	**---**

Table (44): Elective courses for 3rd level students [Plant Protection Program]
Plant Pathology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07312	**Taxonomy of Fungi**	**2**	**2**	**2**	**3**	**---**
07313	**Physiology of Fungi**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	**07101**
07314	**Beneficial Micro-organisms and their Economic Use**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11302	**Insect physiology**	**2**	**2**	**2**	**3**	**11102**
11311	**Insects transmitting plant diseases**	**2**	**2**	**2**	**3**	**11102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13306	**Production of Economic and Exported Ornamental Plants**	**2**	**2**	**2**	**3**	**13201**
19316	**Plant Breeding**	**2**	**2**	**2**	**3**	**20101**

*The student must study one course (3 credit hours) from each group in each table.

Article (56): Mandatory and elective courses for students of the 3rd level in the Plant Protection Program, Applied Entomology specialization are presented in Tables (45 & 46).

Table (45): Mandatory courses for 3rd level students [Plant Protection Program]
Applied Entomology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11302	**Insect Physiology**	**1**	**2**	**2**	**3**	**11102**
11303	**Insect Morphology**	**1**	**2**	**2**	**3**	**11102**
11305	**Economic Acarology**	**1**	**2**	**2**	**3**	**-**

Table (46): Elective courses for 3rd level students [Plant Protection Program]
Applied Entomology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11304	**Beneficial Insects**	**2**	**2**	**2**	**3**	**11102**
11306	**Silk worm rearing**	**2**	**2**	**2**	**3**	**11102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11308	**Insect Behavior**	**2**	**2**	**2**	**3**	**11102**
11311	**Insects Transmitting Plant Diseases**	**2**	**2**	**2**	**3**	**11102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11313	**Parasitology**	**2**	**2**	**2**	**3**	**11101**
11314	**Principles of Embryology**	**2**	**2**	**2**	**3**	**11101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17305	**Bioassay of Pesticides**	**2**	**2**	**2**	**3**	**---**
17413	**Toxicology**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table.

Article (57): Mandatory and elective courses for students of the 3rd level in the Plant Protection Program, Pesticide Chemistry & Technology specialization are presented in Tables (47 & 48).

Table (47): Mandatory courses for 3rd level students [Plant Protection Program]
Pesticide Chemistry & Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17301	**Pesticide Analysis**	**1**	**2**	**2**	**3**	**17301**
17302	**Chemistry of Insecticides**	**1**	**2**	**2**	**3**	**17102**
17303	**Chemistry of Fungicides**	**1**	**2**	**2**	**3**	**17102**

Table (48): Elective courses for 3rd level students [Plant Protection Program]
Pesticide Chemistry & Technology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17304	**Chemistry of Nematicides**	**2**	**2**	**2**	**3**	**---**
17308	**Chemistry of Acaricides**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17305	**Bioassay of Pesticides**	**2**	**2**	**2**	**3**	**---**
17309	**Control of Pest Stored Products**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13304	**Production and Handling Medical and Aromatic Plants**	**2**	**2**	**2**	**3**	**13201**
17310	**Advanced Organic Chemistry**	**2**	**2**	**2**	**3**	**17102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11302	**Insect Physiology**	**2**	**2**	**2**	**3**	**11102**
11305	**Acarology**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (58): Mandatory courses for the 4th level students in Plant Protection program, are presented in Tables (49).

Table (36): Mandatory courses for 4th level students [Plant Protection Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
30400	**Designing and Planning of Graduation Project**	**1**	**1**	**-**	**1**	**---**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
34405	**Biotechnology and Its Application in Plant Protection**	**2**	**2**	**2**	**3**	**20101**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Article (59): Mandatory and elective courses for students of the 4th level in Plant Pathology program, Plant Pathology specialization are presented in Tables (50 & 51).

Table (50): Mandatory courses for 4th level students [Plant Protection Program]
Plant Pathology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07402	**Fungal Plant Diseases**	**1**	**2**	**2**	**3**	**07302**
07408	**Nematode Diseases of Plants**	**1**	**2**	**2**	**3**	**07302**

Table (51): Elective courses for 4th level students [Plant Protection Program]
Plant Pathology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07401	**Relationship Between the Pathogen and the Host**	**1**	**2**	**2**	**3**	**07302**
07403	**Plant Diseases Diagnosis**	**1**	**2**	**2**	**3**	**07302**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07407	**Plant Anatomy**	**1**	**2**	**2**	**3**	**07102**
07411	**Plant Taxonomy**	**1**	**2**	**2**	**3**	**07102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17303	**Chemistry of Fungicides**	**1**	**2**	**2**	**3**	**17102**
17401	**Toxicology**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07409	**Physiogenic Diseases**	**2**	**2**	**2**	**3**	**---**
07416	**Plant Disease Epidemology and Forecasting**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07406	**Seed Pathology**	**2**	**2**	**2**	**3**	**07302**
07417	**Postharvest Diseases**	**2**	**2**	**2**	**3**	**07302**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13305	**Nurseries, Greenhouses and CommercialFarms**	**2**	**2**	**2**	**3**	**13201**
14311	**Meteorology (Principles and Applications)**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (60): Mandatory and elective courses for students of the 4th level in the Plant Protection program, Applied Entomology specialization are presented in Tables (52 & 53).

Table (52): Mandatory courses for 4th level students [Plant Protection Program] Applied Entomology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11402	**Insect Taxonomy**	**1**	**2**	**2**	**3**	**---**
11405	**Principles of Beekeeping**	**2**	**2**	**2**	**3**	**---**

Table (53): Elective courses for 3rd level students [Plant Protection Program] Applied Entomology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11401	**Insect Ecology**	**1**	**2**	**2**	**3**	**---**
11409	**Medical and Veterinary Insects**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20302	**Cell biology**	**1**	**2**	**2**	**3**	**---**
05460	**Insect Control Machines**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14311	**Meteorology (Principles and Applications)**	**1**	**2**	**2**	**3**	**---**
14403	**Organic Agriculture**	**1**	**2**	**2**	**3**	**14304 & 14305**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	**07101**
07408	**Nematode Diseases of Plants**	**2**	**2**	**2**	**3**	**07102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11404	**Biological Control**	**1**	**2**	**2**	**3**	**---**
11407	**Nanotechnology in the Field of Entomology**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11403	**House Pests**	**2**	**2**	**2**	**3**	**11102**
11417	**Principals of Economic Zoology**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (61): Mandatory and elective courses for students of the 4th level in the Plant Protection program, Pesticide Chemistry & Technology specialization are presented in Tables (54 & 55).

Table (54): Mandatory courses for 4th level students [Plant Protection Program] Pesticide Chemistry & Technology specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17401	**Toxicology**	**1**	**2**	**2**	**3**	**---**
17402	**Chemistry of Herbicides**	**2**	**2**	**2**	**3**	**---**

Table (55): Elective courses for 4th level students [Plant Protection Program] Pesticide Chemistry & Technology specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17403	**Pesticide Formulation**	**1**	**2**	**2**	**3**	**---**
17404	**Chemistry of Natural Products**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17410	**Advanced Analytical Chemistry**	**1**	**2**	**2**	**3**	**17103**
17411	**Advanced Quantitative Analytical Chemistry**	**1**	**2**	**2**	**3**	**17103**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14308	**Colloidal Properties**	**1**	**2**	**2**	**3**	**14201**
14311	**Metrology (Principles and Applications)**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	**07101**
07401	**Relationship Between the Pathogen and the Host**	**2**	**2**	**2**	**3**	**07302**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17406	**Applied Organic Chemistry**	**2**	**2**	**2**	**3**	**17102**
17408	**Properties of Organic Reactions**	**2**	**2**	**2**	**3**	**17102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17407	**Applied Physical Chemistry**	**2**	**2**	**2**	**3**	**17101**
17409	**Principles of Chemical Reactions Measurement**	**2**	**2**	**2**	**3**	**17101**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Fifth: Agricultural Biotechnology Program

The student in the Biothecnology program should study 140 credit hours in the undergraduate level, distributed as follows:

Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
29	2	47	12	32	18

Third Level Courses

Article (62): Mandatory courses for students of the 3rd level in the Biothecnology Program are presented in Table (56).

Table (56): Mandatory courses for 3rd level students [Biotechnology Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
35301	**Biotechnology for Microorganisms**	**1**	**2**	**2**	**3**	**20101**
19316	**Plant Breeding**	**1**	**2**	**2**	**3**	**20101**
20321	**Biological Statistics**	**1**	**2**	**2**	**3**	**05101**
15309	**Nuclear Acid Chemistry**	**2**	**2**	**2**	**3**	**---**
20322	**Population Genetics**	**2**	**2**	**2**	**3**	**---**
30399	**Field training (Within the Biothecnology Program)**	**2**	**--**	**6**	**2**	**---**

Article (63): Mandatory and elective courses for students of the 3rd level in the Biotechnology Program are presented in Tables (57 & 58).

Table (57): Mandatory courses for 3rd level students [Biothecnology Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20302	**Cell Biology**	**1**	**2**	**2**	**3**	**20101**
20303	**Genetic Technique**	**1**	**2**	**2**	**3**	**20101**
20305	**Cytogenetics**	**1**	**2**	**2**	**3**	**20101**

Table (58): Elective courses for 3rd level students [Biothecnology Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20304	**Human Genetics and Society**	**2**	**2**	**2**	**3**	**20101**
20307	**Quantitative Genetics**	**2**	**2**	**2**	**3**	**20101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20313	**Genetics and Metabolism**	**2**	**2**	**2**	**3**	**20101**
20315	**Genetic Resources and Mutations**	**2**	**2**	**2**	**3**	**20101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07302	**Plant Pathology (general)**	**2**	**2**	**2**	**3**	**---**
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	**07101**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (64): Mandatory courses for students of the 4th level in the Biothecnology Program are presented in Tables (59).

Table (59): Mandatory courses for 4th level students [Biothecnology Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
30400	**Designing and Planning of Graduation Project**	**1**	**1**	**-**	**1**	**---**
20404	**Molecular Genetics**	**1**	**2**	**2**	**3**	**20101**
15316	**Enzymes**	**1**	**2**	**2**	**3**	**20101**
20401	**Genetic Engineering**	**2**	**2**	**2**	**3**	**20101**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Article (65): Elective courses for students of the 4th level in the Biothecnology Program are presented in Table (60).

Table (60): Elective courses for 4th level students in the Biothecnology Program

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20406	**Regulation of Gene Expression**	**1**	**2**	**2**	**3**	**20101**
20414	**Genetics of Microorganisms**	**1**	**2**	**2**	**3**	**20101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06302	**Dairy Microbiology**	**1**	**2**	**2**	**3**	**06201**
08408	**Genetic Improvement in Farm Animals**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20412	**Bioinformatics and Genome Analysis**	**1**	**2**	**2**	**3**	**20101**
20413	**Immunogenetics**	**1**	**2**	**2**	**3**	**20101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
20410	**Molecular Biology**	**2**	**2**	**2**	**3**	**20302**
20416	**Genomics**	**2**	**2**	**2**	**3**	**--**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
35405	**Biotechnology and its Agricultural Applications**	**2**	**2**	**2**	**3**	**20101**
35411	**Biotechnology in Environmental Protection and Energy Production**	**2**	**2**	**2**	**3**	**20101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
15310	**Lipids, Protein, and Carbohydrates Biochemistry**	**2**	**2**	**2**	**3**	**15201**
17404	**Natural Products Chemistry**	**2**	**2**	**2**	**3**	**--**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Sixth: Agricultural Socioeconomic Program

The student in the Agricultural Socioeconomic program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Agricultural Extension	**29**	**2**	**44**	**9**	**35**	**21**
Agriculture Economics	**29**	**2**	**44**	**9**	**35**	**21**
Home Economics	**29**	**2**	**44**	**9**	**35**	**21**
Rural Development	**29**	**2**	**44**	**9**	**35**	**21**

Third Level Courses

Article (66): Mandatory and elective courses for students of the 3rd level in the Agricultural Socioeconomic Program are presented in Tables (61 & 62).

Table (61): Mandatory courses for 3rd level students [Agricultural Socioeconomic Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01303	**Agric. Extension Education Psychology**	**1**	**2**	**2**	**3**	**01201**
04301	**Family Affairs Management**	**1**	**2**	**2**	**3**	**04102**
18306	**Development of Rural Communities in the Old and New Reclaimed Areas**	**2**	**2**	**2**	**3**	**18101**
30399	**Field Training (Within the Agricultural Socioeconomic Program)**	**2**	**-**	**6**	**2**	**-**

Table (62): Elective courses for students of the 3rd level [Agricultural Socioeconomic Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01398	**Selective Topics in Agric. Extension Education**	**2**	**2**	**2**	**3**	**-**
03398	**Selected Topics in Economics and Agribusiness**	**2**	**2**	**2**	**3**	**-**
04398	**Selected Topics in Family Affairs Management and Institutes**	**2**	**2**	**2**	**3**	**-**
18398	**Selected Topics in Rural Development**	**2**	**2**	**-**	**3**	**-**

*The student must study one course (3 credit hours) from this table according to his/her specialization.

Article (67): Mandatory and elective courses for students of the 3rd level in the Agricultural Socioeconomic Program, Agriculture Extension specialization are presented in Tables (63 & 64).

Table (63): Mandatory courses for students of the 3rd level in Agricultural Socioeconomic Program

Agriculture Extension specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01301	**Agric. Extension Edu. Methods & Aids**	**1**	**2**	**2**	**3**	**01201**
01302	**Agric. Extension Programs & Projects**	**1**	**2**	**2**	**3**	**01201**
01304	**Adult Education**	**1**	**2**	**2**	**3**	**01201**
08303	**Production of Dairy and Beef Cattle**	**1**	**2**	**2**	**3**	**-**

Table (64): Elective courses for students of the 3rd level in Agricultural Socioeconomic Program
Agriculture Extension specialization.*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01305	**Training in Agric. Extension Work**	**2**	**2**	**2**	**3**	**01201**
01308	**Diffusion & Adoption of Agric. Innovations**	**2**	**2**	**2**	**3**	**01201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01307	**Agricultural Journalism**	**2**	**2**	**2**	**3**	**01201**
01310	**Applications of Information Technology in Agric. Extension**	**2**	**2**	**2**	**3**	**01201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09309	**Poultry Farms Management**	**2**	**2**	**2**	**3**	**09201**
11310	**Insect Pests and Honey Bees**	**2**	**2**	**2**	**3**	**11102**

*The student must study one course (3 credit hours) from each group in each table.

Article (68): Mandatory and elective courses for students of the 3rd level in the Agricultural Socioeconomic Program, Agriculture Economics specialization are presented in Tables (65 & 66).

Table (65): Mandatory courses for students of the 3rd level in the Agricultural Socioeconomic Program.

Economics and Agribusiness specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03310	**Agribusiness Management**	**1**	**2**	**2**	**3**	**03102**
03311	**Statistics for Economists**	**1**	**2**	**2**	**3**	**-**
03312	**Agricultural Marketing**	**1**	**2**	**2**	**3**	**03101 & 03102**
14309	**Soil Reclamation and Improvement**	**1**	**2**	**2**	**3**	**14201**

Table (66): Elective courses for students of the 3rd level in the Agricultural Socioeconomic Program

Economics and Agribusiness specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03316	**Agricultural Laws, Legislation, and Taxes**	**2**	**2**	**2**	**3**	**03102**
03322	**Agricultural Price Analysis**	**2**	**2**	**2**	**3**	**03101 & 03102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03314	**Resource Economics**	**2**	**2**	**2**	**3**	**---**
03326	**Planning and Managing Agricultural Human Resources**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09309	**Poultry Farms Management**	**2**	**2**	**2**	**3**	**09201**
11310	**Insect Pests and Honey Bees**	**2**	**2**	**2**	**3**	**11102**

*The student must study one course (3 credit hours) from each group in each table.

Article (69): Mandatory and elective courses for students of the 3rd level in the Agricultural Socioeconomic Program, Home Economics specialization are presented in Tables (67 & 68).

Table (67): Mandatory courses for students of the 3rd level in the Agricultural Socioeconomic Program

Home Economics specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04302	**Maternal and Childcare**	**1**	**2**	**2**	**3**	**04102**
04303	**Interior Design of the Housing**	**1**	**2**	**2**	**3**	**04102**
04304	**Human Nutrition**	**1**	**2**	**2**	**3**	**04102**
19315	**Statistics and Experimental Designs**	**1**	**2**	**2**	**3**	**---**

Table (68): Elective courses for students of the 3rd level in the Agricultural Socioeconomic Program

Home Economics specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04306	**Fiber Textiles and Care Methods**	**2**	**2**	**2**	**3**	**04101**
04307	**Home Furnishing Fabrics**	**2**	**2**	**2**	**3**	**04101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04308	**Home Economic Extension-Family Stability**	**2**	**2**	**2**	**3**	**04101**
04309	**Health, Nutrition and Environmental Extension Programs**	**2**	**2**	**2**	**3**	**04101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
06306	**Manufacture of Various Dairy Products**	**2**	**2**	**2**	**3**	**06201**
33353	**Sensory and Physical Properties of Food and Dairy Products**	**2**	**2**	**2**	**3**	**15202**

*The student must study one course (3 credit hours) from each group in each table.

Article (70): Mandatory and elective courses for students of the 3rd level in the Agricultural Socioeconomic Program, Rural Development specialization are presented in Tables (69 & 70).

Table (69): Mandatory courses for students of the 3rd level in the Agricultural Socioeconomic Program.

Rural Development specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18301	**Rural Social Institutions**	**1**	**2**	**2**	**3**	**18101**
18302	**Contemporary Social Theories**	**1**	**2**	**2**	**3**	**18101**
18303	**Methods of Social Research**	**1**	**2**	**2**	**3**	**18101**
08303	**Production of Dairy and Beef Cattle**	**1**	**2**	**2**	**3**	**---**

Table (70): Elective courses for students of the 3rd level in the Agricultural Socioeconomic Program

Rural Development specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18304	**Demographic Analysis of the Rural Society**	**2**	**2**	**2**	**3**	**18101**
18307	**Transfer and Diffusion of Innovations**	**2**	**2**	**2**	**3**	**18101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18305	**Preparation of Rural Leaders and Administrators**	**2**	**2**	**2**	**3**	**18101**
18310	**Rural Investment Incentives and Small Enterprises**	**2**	**2**	**2**	**3**	**18101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09309	**Poultry Farms Management**	**2**	**2**	**2**	**3**	**09201**
11310	**Insect Pests and Honey Bees**	**2**	**2**	**2**	**3**	**11102**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (71): Mandatory and elective courses for students of the 4th level in the Agricultural Socioeconomic Program are presented in Tables (71 & 72).

Table (71): Mandatory courses for 4th level students [Agricultural Socioeconomic Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03418	**Feasibility Studies of Agricultural Projects**	**1**	**2**	**2**	**3**	**---**
30400	**Designing and Planning of a Graduation Project**	**1**	**1**	**-**	**1**	**---**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Table (72): Elective courses for 4th level students [Agricultural Socioeconomic Program] *

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01411	**Leadership in Agric. Extension Work**	**2**	**2**	**2**	**3**	**02201**
03405	**Marketing and Electronic Trade (E-Trade)**	**2**	**2**	**2**	**3**	**---**
04402	**World Malnutrition Problems**	**2**	**2**	**2**	**3**	**---**
18408	**Dynamics of Social Change**	**2**	**3**	**-**	**3**	**18101**

*The student must study one course (3 credit hours) not from within his/her specialization.

Article (72): Mandatory and elective courses for students of the 4th level in the Agricultural Socioeconomic Program, Agriculture Extension specialization are presented in Tables (73 & 74).

Table (73): Mandatory courses for 4th level students [Agricultural Socioeconomic Program]

Agriculture Extension specialization.

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01401	**Social Statistical**	**1**	**2**	**2**	**3**	**01201**
01402	**Management of Agric. Extension Work**	**1**	**2**	**2**	**3**	**01201**

Table (74): Elective courses for 4th level students [Agricultural Socioeconomic Program]

Agriculture Extension specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01404	**Rural Human Resources Development**	**1**	**2**	**2**	**3**	**01201**
01405	**Agric. Extension & Rural Development**	**1**	**2**	**2**	**3**	**01201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07401	**Relationship Between the Pathogen and the Host**	**1**	**2**	**2**	**3**	**07302**
11403	**House Pests**	**1**	**2**	**2**	**3**	**11102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01407	**Agric. Ext. & Rural Youth and Women Issues**	**2**	**2**	**2**	**3**	**01201**
01408	**Agric. Extension Approaches**	**2**	**2**	**2**	**3**	**01201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
01410	**Presentation and Verbal Skills**	**2**	**2**	**2**	**3**	**01201**
01413	**Comprehensive Quality Management in Agric. Extension Work**	**2**	**2**	**2**	**3**	**01201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
17306	**General Pesticides**	**2**	**2**	**2**	**3**	**---**
19326	**Animal and Poultry Forage Crops**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (73): Mandatory and elective courses for students of the 4th level in the Agricultural Socioeconomic Program, Economics and Agribusiness specialization are presented in Tables (75 & 76).

Table (75): Mandatory courses for 4th level students [Agricultural Socioeconomic Program]

Economics and Agribusiness specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03410	**Agricultural Policy and Agricultural Development**	**1**	**2**	**2**	**3**	**03101 & 03102**
03425	**Finance and Agricultural Crediting**	**1**	**2**	**2**	**3**	**03311 & 03102**

Table (76): Elective courses for 4th level students [Agricultural Socioeconomic Program]

Economics and Agribusiness specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03401	**History of Economic Thought**	**1**	**2**	**2**	**3**	**03101 & 03102**
03422	**Economic Analysis**	**1**	**2**	**2**	**3**	**03101 & 03102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
08401	**Formulation of Rations and Animal Feeding**	**1**	**2**	**2**	**3**	**08201**
16403	**Cultivation and Production of Citrus**	**1**	**2**	**2**	**3**	**16201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03404	**Economics of Land and Water Resources**	**2**	**2**	**2**	**3**	**03101**
03414	**Agricultural Cooperation and Cooperatives**	**2**	**2**	**2**	**3**	**03101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03415	**Agricultural Accounting**	**2**	**2**	**2**	**3**	**03310 & 03311**
03424	**Logistics and Supply Chain Management**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
02308	**Silviculture and Trees Investment**	**2**	**2**	**2**	**3**	**02201**
33453	**Standards, Laws and Regulations for Food and Dairy**	**2**	**3**	**-**	**3**	**06201**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (74): Mandatory and elective courses for students of the 4th level in the Agricultural Socioeconomic Program, Home Economics specialization are presented in Tables (77 & 78).

Table (77): Mandatory courses for 4th level students [Agricultural Socioeconomic Program]

Home Economics specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04403	**Design and Making Clothes Techniques**	**1**	**2**	**2**	**3**	**04102**
04404	**Methods of Teaching Home Economics**	**1**	**2**	**2**	**3**	**04102**

Table (78): Elective courses for 4th level students [Agricultural Socioeconomic Program]

Home Economics specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04406	**Home Furniture Arrangement**	**1**	**2**	**2**	**3**	**---**
04407	**Housing and Service Facilities**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13405	**Uses of Medicinal and Aromatic Plants and their Active Ingredients**	**1**	**2**	**2**	**3**	**13201**
19420	**Fiber Crops Production and Technology**	**1**	**2**	**2**	**3**	**19211**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
04409	**Preparing, Cooking and Food Evaluation**	**2**	**2**	**2**	**3**	**04101**
04411	**Therapeutic Nutrition**	**2**	**2**	**2**	**3**	**04101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
09309	**Poultry Farms Management**	**2**	**2**	**2**	**3**	**09201**
11414	**Honey Bee Projects and Medical Importance of its Products**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Article (75): Mandatory and elective courses for students of the 4th level in the Agricultural Socioeconomic Program, Rural Development specialization are presented in Tables (79 & 80).

Table (79): Mandatory courses for 4th level students [Agricultural Socioeconomic Program]

Rural Development specialization

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18401	**Analysis of Social and Environmental Rural Problems**	**1**	**2**	**2**	**3**	**18101**
18403	**Social Statistics and Its Applications**	**1**	**2**	**2**	**3**	**18101**

Table (80): Elective courses for 4th level students [Agricultural Socioeconomic Program]

Rural Development specialization*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18406	**Rural Social Organizations**	**1**	**2**	**2**	**3**	**18101**
18409	**Rural Family**	**1**	**2**	**2**	**3**	**18101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
13401	**Landscape Gardening and Design**	**1**	**2**	**2**	**3**	**13201**
11403	**House Pests**	**1**	**2**	**2**	**3**	**11102**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18410	**Rural Culture and Social Structure**	**2**	**3**	**-**	**3**	**18101**
18412	**Obstacles of Sustainable Rural Development**	**2**	**2**	**2**	**3**	**18101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
18405	**Rural Social Policy**	**2**	**3**	**-**	**3**	**18101**
18407	**Governance and Rural Development**	**2**	**3**	**-**	**3**	**18101**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
11414	**Honey Bee Projects and Medical Importance of its Products**	**2**	**2**	**2**	**3**	**---**
33454	**Trading, storage and Marketing of Food and Dairy Products**	**2**	**3**	**-**	**3**	**06201 & 15202**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Seventh: Soil and Water Science Program

The student in the Soil and Water Science program should study 140 credit hours in the undergraduate level, distributed as follows:

Specialization	Basic Sciences		Basic and general agricultural sciences		Specialized agricultural sciences	
	Mandatory	Elective	Mandatory	Elective	Mandatory	Elective
Soil and Water Sciences	**29**	**2**	**47**	**12**	**32**	**18**

Third Level Courses

Article (76): Mandatory and elective courses for students of the 3rd level in the Soil and Water Science Program are presented in Tables (81 & 82).

Table (81): Mandatory courses for 3rd level students [Soil and Water Science Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14301	**Soil Genesis and Classification**	**1**	**2**	**2**	**3**	**14201**
14302	**Environmental Soil Chemistry**	**1**	**3**	**-**	**3**	**14201**
14305	**Plant Nutrition**	**1**	**3**	**-**	**3**	**14201**
14306	**Geographic Information Systems (GIS)**	**1**	**2**	**2**	**3**	**---**
19315	**Statistics and Experimental Design**	**1**	**2**	**2**	**3**	**---**
14303	**Environmental Soil Physics**	**2**	**2**	**2**	**3**	**14201**
14304	**Environmental Soil Microbiology**	**2**	**2**	**2**	**3**	**14201**
30399	**Field Training (Within the Soil and Water Science Program)**	**2**	**-**	**6**	**2**	**---**

Table (82): Elective courses for students of the 3rd level [Soil and Water Science Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14309	**Soil Reclamation and Improvement**	**1**	**3**	**-**	**3**	**14201**
14310	**Rocks and Minerals**	**1**	**2**	**2**	**3**	**14201**
14311	**Meteorology (Basics and Applications)**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14307	**Fundamentals of Remote Sensing**	**2**	**2**	**2**	**3**	**--**
14308	**Characteristics of Colloids**	**2**	**2**	**2**	**3**	**14201**
14312	**Soil Survey and Evaluation**	**2**	**2**	**2**	**3**	**14201**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03404	**Land and Water Resources Economics**	**2**	**2**	**2**	**3**	**03101**
05359	**Agricultural Engineering and Surveying**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
07307	**Plant Physiology**	**2**	**2**	**2**	**3**	**07101**
17407	**Applied Physical Chemistry**	**2**	**2**	**2**	**3**	**17102**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (77): Mandatory and elective courses for students of the 4th level in the Soil and Water Science Program are presented in Tables (83 & 84).

Table (71): Mandatory courses for 4th level students [Soil and Water Science Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14401	**Soil, Water, Plant and Fertilizer Analysis**	**1**	**-**	**6**	**3**	**14201**
14404	**Irrigation and Agricultural Drainage**	**1**	**2**	**2**	**3**	**14201**
14408	**Water Resources Management**	**2**	**2**	**-**	**2**	**14201**
30400	**Design & Planning of a Graduation Project**	**1**	**1**	**-**	**1**	**---**
14402	**Soil Fertility**	**1**	**2**	**2**	**3**	**14201**
14403	**Organic Farming**	**2**	**2**	**2**	**3**	**14304 & 14305**
30401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
30410	**English Language (Scientific Writing)**	**2**	**2**	**--**	**2**	**30110**

Table (84): Elective courses for 4th level students [Soil and Water Science Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14406	**Management of Agricultural Wastes**	**1**	**1**	**2**	**2**	**14304**
14409	**Groundwater Hydrology**	**1**	**1**	**2**	**2**	**---**
14410	**Saline Agriculture**	**1**	**2**	**-**	**2**	**14305**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
03418	**Feasibility Study of Agricultural Projects**	**1**	**2**	**2**	**3**	**---**
05455	**Engineering of Land Reclamation Equipment**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14405	**Fertilizers and Fertilizations**	**2**	**2**	**2**	**3**	**---**
14407	**Soil & Water Pollution & Remediation**	**2**	**2**	**2**	**3**	**14302**
14411	**Water Quality for Agriculture**	**2**	**2**	**2**	**3**	**14301**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
14412	**Crop Irrigation and Fertilization**	**2**	**2**	**--**	**2**	**---**
14413	**Environmental Impact Assessment of Agricultural Projects**	**2**	**2**	**--**	**2**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05458	**Advanced Irrigation Systems**	**2**	**2**	**2**	**3**	**---**
12302	**Greenhouse Vegetables**	**2**	**2**	**2**	**3**	**12201**

*The student must study one course from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Chapter IV
Agricultural Engineering Program

The student in the Agricultural Engineering Program should study 140 credit hours in the undergraduate level, distributed as follows:

First level Courses

Article (78): Mandatory courses for students of the 1st level in the Agricultural Engineering Program are presented in Tables (85 & 86).

Table (85): Mandatory courses for 1st level students [Agricultural Engineering Program]

First Semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
05102	**Algebra and Analytical Geometry**	**1**	**2**	**2**	**---**
05104	**Physics (1)**	**2**	**2**	**3**	**---**
05111	**Engineering Drawing (1)**	**1**	**2**	**2**	**---**
05115	**Principles of Programming System**	**1**	**3**	**2**	**---**
05121	**Introduction to Agricultural Engineering**	**2**	**2**	**3**	**---**
17104	**Principles of Organic and Physical Chemistry**	**2**	**2**	**3**	**---**
18101	**Principles of Rural Sociology**	**1**	**3**	**2**	**---**
30100	**Human Rights***	**2**	**2**	**-**	**---**

*Result is announced as either pass or fail only.

Table (86): Mandatory courses for 1st level students [Agricultural Engineering Program]

Second Semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
05103	**Differentiation and Integration**	**1**	**2**	**2**	**---**
05105	**Physics (2)**	**2**	**2**	**3**	**---**
05108	**Statics and Dynamics**	**2**	**2**	**3**	**---**
05112	**Engineering Drawing (2)**	**1**	**3**	**2**	**---**
05114	**Production Engineering**	**1**	**4**	**3**	**---**
07104	**Principles of Botany and Plant Physiology**	**2**	**2**	**3**	**---**
30110	**English Language (General)**	**2**	**-**	**2**	**---**

Second level Courses

Article (79): Mandatory and elective courses for students of the 2nd level in the Agricultural Engineering Program are presented in Tables (87, 88, 89 & 90).

Table (87): Mandatory courses for 2nd level students [Agricultural Engineering Program]

First Semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
05203	**Principles of Theory of Functions**	**1**	**2**	**2**	**---**
05211	**Principles of Electrical Engineering & Application**	**2**	**2**	**3**	**---**
05215	**Theory of Structure and Stress Analysis**	**2**	**2**	**3**	**---**
14201	**Fundamentals of Soil Science**	**2**	**2**	**3**	**---**
19211	**Principles of Field Crop Production**	**2**	**2**	**3**	**---**

Table (88): Elective courses for 2nd level students [Agricultural Engineering Program]*

First Semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
02201	**Principles of Forestry and Wood Technology**	**2**	**2**	**3**	**---**
31201	**Basics of Horticultural Production**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from the above table.

Table (89): Mandatory courses for 2nd level students [Agricultural Engineering Program]

Second semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
03201	**Principles of Economics and Agricultural Economics**	**2**	**2**	**3**	**---**
05204	**Differential and Integral Equations**	**2**	**2**	**3**	**---**
05216	**Properties and Testing of Materials and Nanotechnology**	**2**	**2**	**3**	**---**
05218	**Heat transfer**	**2**	**2**	**3**	**05105**
32201	**Basics of Animal, Fish and poultry production**	**2**	**2**	**3**	**---**

Table (90): Elective courses for 2nd level students [Agricultural Engineering Program]*

Second semester

Course Code	Course Name	Theoretical	Applied-Practical	Credit hours	Prerequisite
05212	**Principles of Electronic Engineering & Application Semi – Conductors**	**2**	**2**	**3**	**---**
14306	**Geographic Information Systems (GIS)**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from the above table.

Third Level Courses

Article (80): Mandatory and elective courses for students of the 3rd level in the Agricultural Engineering Program are presented in Tables (91 & 92).

Table (91): Mandatory courses for 3rd level students [Agricultural Engineering Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05311	**Thermodynamics**	**1**	**2**	**2**	**3**	**---**
05312	**Internal Combustion Engines**	**1**	**2**	**2**	**3**	**---**
05313	**Fluid Mechanics**	**1**	**2**	**2**	**3**	**---**
05314	**Machines Drawing**	**1**	**1**	**3**	**2**	**---**
05315	**Theory of Machines**	**1**	**2**	**2**	**3**	
05317	**Machine Design (a)**	**1**	**1**	**3**	**2**	**---**
05321	**Plane Surveying**	**2**	**2**	**2**	**3**	**---**
05322	**Engineering Statistics**	**2**	**1**	**3**	**2**	**05101**
05323	**Hydraulic Pumps and Open-Channels**	**2**	**2**	**2**	**3**	**---**
30399	**Field Training (Within the Agriculture Engineering Program)**	**2**	**-**	**6**	**2**	**---**

Table (92): Elective courses for 3rd level students [Agricultural Engineering Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05318	**Electrical Engineering Applications**	**1**	**2**	**2**	**3**	**---**
05319	**Reinforced Concrete**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05325	**Principles of Measurements and Control**	**2**	**2**	**2**	**3**	**---**
05327	**Machine Design (b)**	**2**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05324	**Renewable Energy in Agriculture**	**2**	**2**	**2**	**3**	**---**
05328	**Hydraulic Control Systems**	**2**	**2**	**2**	**3**	**---**

*The student must study one course (3 credit hours) from each group in each table.

Fourth Level Courses

Article (81): Mandatory and elective courses for students of the 3rd level in the Agricultural Engineering Program are presented in Tables (93 & 94).

Table (93): Mandatory courses for 4th level students [Agricultural Engineering Program]

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05400	**Designing and Planning of a Graduation Project**	**1**	**1**	**-**	**1**	**---**
05411	**Farm Power Engineering**	**1**	**2**	**2**	**3**	**---**
05412	**Engineering Process of Agricultural Products**	**1**	**2**	**2**	**3**	**05312**
05413	**Engineering of Farm Structures and Environmental Control**	**1**	**2**	**2**	**3**	**05313**
05414	**Planning and Design of Irrigation Systems**	**1**	**2**	**2**	**3**	**05321**
05401	**Graduation Project**	**2**	**-**	**6**	**2**	**---**
05421	**Engineering of Farm Machinery (a)**	**2**	**2**	**2**	**3**	**05317**
05422	**Maintenance and Operation of Farm Tractors and Machinery**	**2**	**1**	**3**	**2**	**---**
30410	**English Language (Scientific Writing)**	**2**	**2**	**-**	**2**	**30110**

Table (94): Elective courses for 4th level students [Agricultural Engineering Program]*

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05415	**Engineering of Bio-Systems**	**1**	**2**	**2**	**3**	**---**
05417	**Principles of Rationalization and Management use of Energy**	**1**	**2**	**2**	**3**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05423	**Engineering of Farm Machinery (b)**	**2**	**1**	**3**	**2**	**---**
05424	**Engineering of Land Reclamation Equipment**	**2**	**1**	**3**	**2**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05426	**Engineering of Food Preservation by Thermal Treatment**	**2**	**1**	**3**	**2**	**05218**
05427	**Engineering of Food Preservation by Moisture Reduction and Storage Systems**	**2**	**1**	**3**	**2**	**05311**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05429	**Engineering of Greenhouses**	**2**	**1**	**3**	**2**	**05218**
05431	**Mechanization of Fish Farming**	**2**	**1**	**3**	**2**	**---**

Course Code	Course Name	Semester	Theoretical	Applied-Practical	Credit hours	Prerequisite
05432	**Irrigation and Drainage Engineering**	**2**	**1**	**3**	**2**	**05314**
05434	**Landscape Irrigation Systems**	**2**	**1**	**3**	**2**	**05314**

*The student must study one course (3 credit hours) from each group in each table, in addition to the university required course (2 credit hours) from Table 2 (first semester).

Chapter V
Course contents of different programs

(01) Agricultural Extension Education Department

01201-Agricultural Extension Communications

Origin and develop of Agric. Extension, Principals and Objective of Agric. Extension Education, Fields of Extension work and Its development Roles, Agric. Extension systems and organizations, Training of Extension Workers, Effective Communication in Extension work, Methods and means of Extension Communication, diffusion and adoption of Agric. Innovations, Leadership and its role in extension communication, basics of planning and evaluating agric. Extension programs, Practical applications in subject topics.

01301- Agricultural Extension Educational Methods & Aids

What are Extension Methods & Aids, and its role in Education and Learning Process, Classification of Extension Methods & Aids, Social and Psychological Bases in usage of Extension Methods &Aids, Advantages and Limitations of Extension & Aids uses, Choosing Methods & Aids , Concepts of Extension Educational Technology and Long-distance Education, Electronic Extension Education Methods, Producing Extension Aids, and Practical Implications in Subject Topics.

01302-Agricultural Extension Projects & Programs

Concepts of Extension Projects and Programs, Basics of Extension Programs Planning, Details Study for Steps of Planning and Executing Extension Programs in different Agric. Fields and Home Economic, Pilot studies for Extension Programs, Means of Planning, Executing and Evaluating Extension Programs.

01303-Psychology of Agricultural Extension Education

Definitions, types and characteristics of human behavior, stages of behavioral change and the role of agricultural extension in every stage, factors affecting human behavior, motivation, attitudes, perception, adaptation and personality, psychological scales, and its application in extension work.

01304-Adult Education

Concept and philosophy of adult education, psychological and social principles of adult education, education and learning theories, planning, execution and evaluation of adult education programs, local and international experiences in the field of adult extension education.

01305-Training in Agricultural Extension Work

Concept of training, training and education, importance of training, elements of the training system, types and methods of training, determining of training needs, planning, execution and evaluation of training programs, extension training in Egypt, practical applications on planning training programs in the field of agricultural extension.

01306-Agricultural Extension exhibits & Museums

Definition of agricultural exhibition & museums, types of exhibitions& museums, theoretical and practical bases in establishing extension exhibitions& museums, steps of planning, executing agricultural exhibits& museums, training, educational and research uses of agricultural exhibitions.

01307-Agricultural Journalism

Concepts of journalism and agricultural journalism, importance of agricultural journalism, information, public opinion and agricultural journalism, elements of journalistic communication, editing of journalistic material, art of journalistic layout, agricultural advertisement, models of some extension studies in the area of agricultural journalism.

01308-Diffusion& Adoption of agricultural innovations

Definitions of diffusion and adoption, main elements of diffusion and adoption processes of agricultural innovation, factors affecting diffusion and adoption of agricultural innovations, models on studies of diffusion and adoption of agricultural innovations, applications on the processes of diffusion and adoption of agricultural innovation.

01309-Agricultural Photography

Definition of photography, importance of photography in extension education, detailed study of the camera, types of cameras, types of films, principles of photography and printing of photographs, characteristics of good extension photograph, interpreting reading extension photograph, applications on different parts of the course.

01310-Applications of Information Technology in Agricultural Extension

Agric. Extension Communication and Information Technology, Historical Background: Terms and Concepts, Use fields of communication technology and information generally and in Extension work specially, Restrictions of uses of communication technology and information, Field applications of communication technology and information: E-learning in Extension systems, use of communication technology and information in situation assessment , prepare Extension workers to use communication technology and information, Evaluation of communication & information tools in Agric. Extension, conducting Agric. Extension researches through Internet, pioneer models and experiences in information technology.

01398-Selected Topics in the area of Agricultural Extension Education

Linkage Agric. Extensions Education Approaches with Researches Findings in different Topics of Agric. Technology, Economic, Psychological, Social and Environmental fields.

01401-Social Statistical

Concept of Social Statistical and Its applications in Agric. Extension, Kinds of Data and Its Resources and Collected Tools, Levels of Measurements in Statistical, frequently distributions, Charts, Analysis one and two Variable Data.

01402-Management of Agricultural Extension Work:

Concept of management, it's importance and functions in extension work, main elements of management (planning, organizing, direction, control), management of Egyptian agricultural extension organization, models of some studies on extension organization management.

01404- Development of Agricultural Human Resource:

Definition of human resources, concept and dimensions of human resources development, role of extension education in human resources development, methods and means of human resources development, strategy of the development of human resources development in Egypt, applications in agricultural human resources development.

01405-Agricultural Extension and Rural Development:

Concept of rural development approaches of agricultural extension in rural development, role of agricultural extension in continuing rural development, incentives and obstacles, applications (case studies) on agricultural extension as an approach to rural development.

01406-Agricultural Extension Problems in the Developing Countries

Policy and Strategy, Objectives, Perception of Extension role, evaluation & monitoring, Extension organization structure, jobs, Management structure, Relations between Extension organization with institutions of Agric. research, education, training and rural services, Extension work programing, Agric. Extension workers, Human resources, Agric. Clients, Organization stability and Modernization & contemporary.

01407-Agricultural Extension and Rural Youth and Women Issues

What are Rural women & youth, Current situation of rural women & youth, the most important Rural women & youth problems, Role of rural women & youth in Agric., animal & poultry Production, Preserving natural, economic, and human resources, Extension studies models in rural women & youth.

01408-Agricultural Extension Approaches

Concept of extension approach, classification of extension approaches: general agricultural extension approach, commodities approach, training and visit approach, educational institutions approach, participation approach, project approach, extension research farms systems approach, extension approaches as applied in Egypt, applications on the criteria of using extension approaches.

01409-Agricultural Extension and Environmental & Population Issues

Basic population concepts, Population problems and benefits of controlling it, Dimensions of Population problems in Egypt, Summary of the National population policy, Principals& objectives,& Means of achieving objectives, Population instruments for Extension work, Basic rural environmental concepts, Environment and Environmental System, Environmental Development, Pollution and environmental degradation, , Quality and environmental protection, Environmental impact assessment, Kinds of Environmental Pollution, Kinds of degradation of rural environmental resources, Management and conservation of environmental & rural resources, Rural environment protection Legislations and the maintenance of its resources, Indicative work mechanisms in dealing with population & environmental issues.

01410-Presentation and Verbal Skills

Concept and means of presentation and verbal, The Basics of preparing, directing and layout of information & data, Criteria of oral expression, problems study of oral expression, Practical applications on presentation and verbal.

01411-Leadership in Agricultural Extension Work

Concept of leadership, theories and sources of leadership, determinants of leadership behavior, types of leaders, importance of rural leaders in extension work, traits of local leaders, methods of discovering, selection, and training of local leaders, roles and functions of local leaders, methods of leadership development.

01412-Roles of Extension in Resources Development and Maximizing Agricultural Productivity

Concepts of agric. resources and its develop justifications, Development of agricultural and irrigation land resources, Dissemination of agricultural resources development techniques, The outstanding problems in the Egyptian countryside and their impact on agric. productivity, The concept of agricultural productivity and justifications for its optimization, Some models of agric. productivity, Measurement methods for agric. productivity, Prospects of agric. extension work on maximizing of agric. productivity.

01413-Management of Comprehensive Quality in Agricultural Extension Work

Justifications of study of comprehensive quality management in extension work, Concept of quality, Historical development of quality, Comprehensive quality concept: its stockholders, Principals of comprehensive quality management, Models of comprehensive quality management, implications of quality management in extension work.

(02) Forestry and Wood Technology Department

02201-Principals of Forestry and Wood Technology

Classification of forests, the economic and environmental benefits of trees, the effect of windbreak and environmental green belt, the role of tree in combating desertification, planting forests using sewage, principals for measuring forests and trees, anatomical and chemical composition of timbers, utilization of wood and relate industries, identifying the different types of local wood and some exported wood, wood as a source of energy.

02303-Wood Structure and The Principles of Wood Identification

Principals of wood formation, structure of hardwoods and softwoods, wood identification chemical nature of wood.

02303-Forest Genetics

Principal genetics of forests and their application, selection and breading methods, elementary tree improvements concepts, using genetic engineering methods and gene transfer in producing and mutating different types for woody trees.

02306-Nurseries Managing and Trees Planting

Collecting and extracting woody tree seeds, seed treatment, nurseries management and tree seedling production, methods of planting timber trees in different regions, special tree plantations, factors affecting choice of different species.

02308-Silviculture and Trees Investment

Introduction of silvicultural methods, tree breeding and management of tree groups, ecological factors affecting tree groups growth.

02310-Wood Production and Seasoning

Production of sawn wood and principals of hard and soft wood grading, physical principals of wood seasoning, principles of wood seasoning, traditional and modern methods of wood seasoning, seasoning disadvantages, air, sun and accelerated seasoning, wood storage.

02401-Wood Physical and Mechanical Properties

Specific gravity of wood substance as related to properties, wood relation to humidity, temperature, sound, light, potentiometric analysis of beams and wooden stake, basic and operational strength, factors affecting strength properties of wood, introduction to rheological properties and non-destructive testing of wood.

02402-Planting and Growing Woody Trees

Tree seedling production, planting timber trees in arid regions, care and treatment of tree planting, afforestation, and reforestation, cutting, and renewing of tree plantations.

02403-Wood Preservation

Wood biodegradation, wood chemical preservatives, methods of wood preserving and treating processes, factors affecting the chemical absorption, effect of chemical treatment on wood physical properties and utilization, theories of wood combustion on wood application in selecting fire-retardants.

02404-Forest Ecology

Forest ecology, different climatic factors and its effect, effect of soil and water factors on forest growth, effect of forests and tree groups on climate and soil features, formation and classification of forest soil, physical, chemical properties and organic matter content of forest and plantations soils, the role of nutrients and their interactions on woody trees growth.

02405-Non-Wood Forest Products

Introduction and importance of non-wood forest products - classification of non-wood products and their natural resources in trees and shrubs in the environment – oils – resins, gums – tannins – natural rubber – fruits – honey production – mushrooms – medical and aromatic extracts –with identification of its plant sources and other benefits–extraction basics and methods – management sustainable and integrated plant sources and their industries.

02406-Ultrastructure of Wood

Ultrastructure of wood tissues, laboratory methods in wood anatomy and the use of polarizing and electron microscopy, ultrastructure of cell wall and cellulose micro fibril structural morphology.

02410-Physiology of Timber Trees

Principles of the tree physiology, the role of nutrient elements in tree development, water relations, soil and climatic factors that affect timber trees physiological processes.

02411-Forest Photogrammetry

Principles of photogrammetry and tree forest inventory, principles of aerial inventory and photogrammetry methods, measurements of land tree and timber stand on vertical photography, introduction on using remote sensing and GPS in forest and trees inventory.

02412- Natural Resources: Soil, Plant and Water

Definition of important natural resources, soil, plant and water from the point of view of biological, economic, environmental, taxa and methods exclusively reserves - management of renewable natural resources - important threats that affect it - biodiversity- protected areas – instinct plant species and methods of protection and preservation- the social, economic, political and cultural components, management and maintenance of natural resources - the impact of pollution and global warming on natural resources and land risks - The role of trees and shrubs in their maintenance and sustainable natural resources.

02413-Forest Mensuration and Principles of Forest Sampling

Measurement of tree height and diameter, determination of tree size and form, determination of tree and log volume, log rule, growth stem analysis, stand volume table, yield, site quality, elementary sampling of forest stands and tree plantations.

02414-Wood Industrial and Wood Products Technology

Round timber, lumber, veneer and plywood industries in Egypt and the world, wood adhesives and theories of adhesion, wood fiber products and particleboard production, pulp and paper production, interior and exterior finishing of wood.

02415-Forest and Range Management

Principles of forest and range management, care and protection of tree groups, type of range and range plants, improvement of natural range, management of range and animal farms in the natural forest conditions.

02422-Technology and Utilization of Renewable Raw Materials

Identification of renewable essential forest row materials wood and non-wood and management of botanical sources sustainable resources and collection, extraction, production methods underlying – technology of the production of food, pesticides, bioenergy sources, pharmaceuticals, feed, organic and bio fertilizers, and others.

02423-Forest Planning

Introducing the concept of planning for forest management - defining the goals of establishing forests and the requirements of society and the principles of inventory the available natural resources and ways to overcome the problems in forest planning - the stages of planning productive forests and environmental protection forests and evaluating their performance.

02424-Medicinal Woody Plants

Definition of importance ant essential shrubs and woody shrubs species that produce natural products, medicinal plants, its different classification, its natural sources, methods of extraction from different plant parts and evaluation of its effect – the most important diseases that could be treated with natural compounds extracted from trees and shrubs -Toxic trees and phytotoxins and means of prevention and treatment - Management and development of medicinal woody plants and their sustainability Strategies for the production and utilization of medical materials projects.

02425-Diseases and Insects of Forestry and Woody Trees

Destructive factors and deterioration of living trees and wood, living, cut down trees and wood products, protection, and treatment of wood against diseases and insects, disease and insect resistance for trees and woods.

02426-Inventory and Classification of Biodiversity in Arid and Desert Regions

The main distributions of forests in the world and their biodiversity, biological diversity in forests in dry regions in terms of the qualitative composition of the plant groups and the relationship of environmental factors and forest systems in dry regions , wood and non-wood products that can be obtained from different ecosystems, the ecological role of woody trees and forests in dry regions, plant structures and the natural fauna found in the dry regions.

(03) Economics and Agribusiness Department

03101-Principles of Economics

The course is an introduction to the science of economics and its relation to other basic sciences, the economic problem, the Egyptian National Economy, consumers' theory, producers' theory, costs of production, supply, demand, price determination, and the different types of markets.

03102-Principles of Agricultural Economics

The course defines the agricultural economy, branches of agricultural economics, nature and characteristics of the industry of agriculture, agricultural economics principle, systems of agricultural production, marketing, financing, cooperation, and agricultural policy, and characteristics of the Egyptian agricultural economy and its problems.

03201-Principles of Economics and Agricultural Economics

The course is confined to defining the science of economics and its branches, the economic problem, economic resources, consumption theory, theory of production and costs, supply and demand theories, market equilibrium, the agricultural economy components, national income and its equilibrium, and the relationship between consumption, investment, and the national income of the country.

03104- National Income Accounts

The course includes definitions of the related concepts of national income accounts such as GNP, GDP, NNP, BOP, and the like; aggregate supply, aggregate demand, economic policy and its components, money and banking, unemployment, and inflation.

03305-Mathematics and Agricultural Statistics

The course includes discussions of differentiation basics which include the one variable case and more, limits theorem, derivatives, partial and total differentiation, sampling, measures of central tendency, measures of dispersion, displaying of agricultural data, correlation and regression analysis, and analysis of variance (ANOVA).

03306-Economics of Agricultural Production

The course includes discussions of production and cost functions, economic efficiency, production in cases of one variable input and two variable inputs and more, production in case of two outputs or more, economies of scale, optimum business size, linear programming and the planning of agricultural production, and income and cost analyses. The course also includes practical applications on the software SPSS.

03307-Economics of Small Enterprises

Definition of an enterprise or project, components of projects initiation, project records' holding, source of funding projects, marketing of small-projects products, investment analysis, methods of cost reduction, project integration, tenders and project initiation procedures, tools of financial and economic project analysis, and some applications of successful small enterprises.

03309-Consumption Economics

The course is confined to the concept of consumptive demand, factors affecting consumptive demand, cost functions and derivatives, forecasting demand, household budget analysis, measurements of the standard of living, poverty lines, and food security and consumption planning.

03310-Agribusiness Management

Definition of agribusiness, funding of agribusinesses, control of agricultural practices, administrative and managerial decision-making tools, characteristics and qualities of the successful agricultural manager, and financial analysis of agribusinesses.

03311-Statistics for Economists

The course includes the major issue pertaining to statistics as perceived by economists. Issues discussed includes data handling, measures of central tendency, measures of dispersion, probability distributions (discrete and continuous), natural distribution, correlation and regression analyses, times-series analysis, index numbers, Chi square test, and ANOVA, with practical application on the software SPSS.

03312-Agricultural Marketing

Definition of agricultural marketing, agricultural marketing problems and related issues, scientific methodology of agricultural marketing, traders and intermediaries, national and foreign markets, agricultural product prices, packing, storing, transporting, and insuring of products, marketing research, marketing plans, marketing strategies, marketing communications, marketing channels, and identification of laws and legislation pertinent to agricultural marketing in Egypt and else.

03314- Resource Economics

The course addresses the definition of economic resources, characteristics of economic resources, types of economic resources, efficiency of resource use, economies of scale or size, resource development, marginal analysis, natural resources, and applications economies of scale in agriculture.

03316-Agricultural Laws, Legislation, and Taxes

Characteristics of the legislative rule, relationship between the law and the state, sources of laws, difference between the public and the private law, legislation characteristics, identification of the agricultural laws, the economic laws, sources of the agricultural laws and legislation, restraints of ownership and agricultural rent, some crimes pertinent to misusing agricultural lands, and ownership contracts and related issues. The course also addresses the issues related to taxations.

03319-Economics of Agricultural Mechanization

Definition of agriculture mechanization, the development of agricultural machinery, the optimal utilization of agricultural machinery, cost minimization related to agricultural machinery, conditions under which agricultural mechanization holds, demand for agricultural mechanization services, operating efficiency of agricultural mechanization in Egypt, and optimal allocation of agricultural machinery operation.

03321-Economics of Floriculture

The course discusses the issues related to the economics of flower production, marketing, and consumption, supply of and demand for flowers and ornamental plants, floriculture's foreign trade issues, problems of flower production in Egypt and else, and economic efficiency of flowers and ornamental plants.

03322-Agricultural Price Analysis

The course discusses all of the issues pertinent to prices in the agricultural sector, supply and demand and price determination in different markets, different types of elasticity measures such as the own-price elasticity of demand, cross-price elasticity of demand, income elasticity of demand, price elasticity of supply, factors affecting the different elasticity measures, seasonality and price fluctuations, price forecasting, and agricultural prices policies in Egypt and in some other economies.

03324-Forests Economics

The course addresses the relative importance of forests in and outside of Egypt, forests' supply and demand, forests utilization, economics of forest development, economics of forest-products industrialization, green economics, factors impacting the deterioration of forest resources worldwide, and national and international trade of forest products.

03326-Planning and Managing Agricultural Human Resources

The course includes discussions of the issues related to the economics of managing human resources in the agricultural sector. Issues discussed includes basic concepts, human resources classifications, supply of and demand for human resources, performance indicators of human resources, economic theories and laws pertaining to agricultural labor, labor vs Capital resources and the associated tradeoffs, immigrations issues of agricultural labor, and income distribution and fairness issues of agricultural inhabitants.

03327-Economics of Agro-industries

The course discusses the definitions of agro-industries and types, determination of the structure of the industries with emphasis on degrees of competition or monopolies, examination of the domestic and foreign markets of the agro-industries, marketing problems of the agro-industries, determination of the appropriate location of the agribusiness, organization structure of the agro-industries, financing sources, nominal and real values of money, and some definitions regarding feasibility studies of agribusinesses.

03330-Mathematical Economics

Mathematical formulation of the most prominent economic theories of consumption, production, cost minimization and profit maximization, linear algebra, partial and total differentiation, difference equations, differential equations, dynamic optimization, and optimal control theory.

03398-Selected Topics in Economics and Agribusiness

Students are confronted with contemporary issues related to economics and agribusiness such as resource deterioration and exhaustion, unemployment, poverty alleviation, inflation, stagflation, sustainable development, environmental economics, natural resources conservation, role of the government in any economy, types of economic systems, pollution, globalization, and exchange rate policies and their impacts on the agricultural sector.

03401-History of Economic Thought

Economic thought in ancient civilizations and Middle Ages, commercial school of thought, naturalists' school of thought, classic school of thought, neoclassical theory, Keynesian economics, and contemporary economic thought theories.

03403-Economics of Animal, Fish, and Poultry Production

The course discusses the production theory of animal, poultry, and fisheries farms, concentration of production and cost functions, supply functions, marketing of animals and their products, marketing channels of animals, the nature of supply and demand forces, price determination, and consumption of meat, poultry, and fish in national and international markets.

03404-Economics of Land and Water Resources

Economic supply of land resources, valuation of agricultural land, agricultural lands utilization and use, land reclamation, water resource economics, water and water laws and legislation, and water rationalization issues, water demand function, elasticity of water demand, water as an input, water as a final product, contemporary land and water issues in Egypt and in some foreign economies, land and water resource conservation policies, optimal resource use of land and water resources, and optimization models pertaining to Land and water resources.

03405-Marketing and Electronic Trade (E-Trade)

Concept of e-trade, marketing systems, marketing strategy, marketing institutions, product pricing, promotion policies, exports control, marketing efficiency, classification of national and international markets, consumers need studies, website selection and internet marketing, managing of information systems, and the like.

03410-Agricultural Policy and Development

Understanding agricultural policy, its objectives, and fields, conceptualizing agricultural development, methods of agricultural policy analysis, the Egyptian agricultural policy, agricultural development programs, planning of the Egyptian agricultural development plans, sustainable agricultural development, and methods leading to achieving agricultural development objectives.

03412-Economics of Fruits and Vegetables

Examination of the factors affecting the production, consumption, and marketing of fruits and vegetables, supply of and demand for fruits and vegetables with examples, the concept and meaning of cash crops, and economic efficiency of fruit and vegetable production.

03414-Agricultural Cooperation and Cooperatives

Principles of agricultural cooperation, contemporary theories of agricultural cooperation, economic and social objectives of agricultural cooperation, socioeconomic services offered by agricultural cooperatives, current status of agricultural cooperatives, the hierarchy of agricultural cooperatives, agricultural cooperative activities and their role in agricultural crediting and loaning, agricultural cooperation laws and legislation, and sources of agricultural cooperative funding with funding obstacles and imperatives.

03415-Principles of Agricultural Accounting

Accounting concepts and principles, the accounting issues, recording, budgeting, accounting procedures for agricultural projects, asset valuation, depreciation of assets and related calculations, accounting techniques and procedures, and the village bank and its role.

03416-Environmental Economics and Sustainable Development

The concept of environmental economics, natural resource economics, conservation policies of natural and environmental resources, types of goods, public, quasi-public, private goods, rivalry resources, exclusive resources, taxes and subsidies, externalities, free rider problems, assessment of environmental damages, Coase theorem, Hardin solutions, bargaining in solving environmental conflict issues, transactions costs, the role of government in governing the economy, determination of the optimal amount of pollution, risk and uncertainty issues in environmental economics, expected value concepts, assassins the benefits and costs of environmental degradation, optimality conditions in environmental economics, social costs and social benefit functions, and modern environmental issues globally and in Egypt.

03418-Feasibility Studies of Agricultural Projects

Definition of the agricultural project and enter

prise, types of agricultural projects, funding and financing of agricultural projects, economic and financial analyses of agricultural projects, studying revenues, costs, and profitability of agricultural projects, asset value determination, liability analysis, and the internal rate of return for agricultural projects.

03420-Economics of Field Crops

Studying the rules impacting the production, consumption, and marketing of field crops, economic rules of price determination, input combination requirements for field crops, foreign trade of field crops, and production and marketing issues related to field crops.

03521-Agricultural Foreign Trade

The course addresses major issues pertaining to international trade of agricultural and food outputs and inputs, exchange rate policies and their impacts on international markets, exportation and importation of food and agricultural inputs and outputs, foreign trade theorems, Balance of Payments BOP, globalization, physical and virtual markets, and economic blocks.

03422-Economic Analysis

The course addresses issues and techniques used in marginal economic analysis, deterministic static models, stochastic models, dynamic models, market equilibrium, general and partial equilibrium models, quantitative and qualitative techniques of economic analysis, welfare economics, consumer and producer's surpluses, nominal and real values of money, business cycles, and the role of government in the national economy.

03423-Quality Systems Management and Applications

Definition of quality, quality measures, Total Quality Management TQM and Quality Control QC, supply chain management, quality assessment procedures and methods, designing of quality systems, standardization, ISO, sustainable development, quality assurance costs and benefits, and application of quality assessment in the dairy and food industries.

03424-Logistics and Supply Chain Management

Definition of logistics and its evolution over times, importance of logistics, systems approach, total cost concept, TQM, transportation, warehousing and storage, materials handling, demand forecasting, lot quantity cost, optimal ordering quantity under perfect knowledge and under risk and uncertainty considerations, customer service and customer satisfaction, connection between logistics and the four Ps of marketing, logistics as a strategic weapon in achieving competitive advantages for business in a highly-competitive environment, and applications which includes mathematical problems and calculations.

03225-Agricultural Crediting and Finance

Studying of the financial needs of farms and agricultural projects, nature of financing and crediting markets, capital formation, crediting principles and financing procedures pertinent to agribusiness firms, loan-payback systems, agricultural insurance, risk and its impact on agribusiness firms, expected-value variance analysis, corporate finance, profitability measures, interest rate and the price of money, the role of the central bank in monetary policies, relationship between the central bank and the commercial banks, loaning and crediting, the role of the agricultural bank in Egyptian villages, and financial forecasting.

03440-Economics of Food Production, Processing, and Marketing

Examination of the food market structure as an integrated system, food-market systems, food marketing, food marketing strategies, factors affecting food quality and safety, optimal size of food plants, economies of scale, cost structure of the food processing industries, profit maximization and cost minimization, planning and financing of a food processing factory, and business planning.

03450-Research Methodology in Economics

This course includes two main parts: the first, discusses issues related to scientific research concepts, types of scientific research, qualitative versus quantitative research, steps used in scientific studies, reviewing the literature, definition of the research problem and objectives, research procedures, sampling and inferential statistics methods, data collection practices, surveying, and internet research in the 21st century. The second, is directed to students applying the skills they learned above in carrying out a scientific research study using surveying techniques.

03460-Principles of Econometrics

The course pertains to introducing students to some quantitative techniques used in economics and agribusiness studies, OLS techniques, correlation and regression analysis, binary and dichotomous variables, categorical variables, ordinal variables, serial and autocorrelation, multicollinearity, hypothesis testing, and using SPSS in statistical analysis.

(04) Home Economics

04101-Principles of Home Economics

Definition of the concept, development and philosophy of home economics (its mission, objectives, fields), the relevance of home economics to other agricultural and non-agricultural sciences, the importance of home economics to family and society as well as to development. In addition to giving a brief idea of the areas of specialization of different home economics.

04301-Family Affairs Management

Historical and Intellectual development of management science, Family (concept- patterns- functions- life cycle), Family resources (types- features- effect factors), Concept and steps of managerial process, Implementations on family resources management (income- time- human effort), Home tasks management, Purchase management.

04302-Maternal and Childcare

The course includes the following: Reproductive systems, puberty, reproductive hormones and the menstrual cycle, fetal growth, health care and nutrition of the pregnant mother, natural and abnormal childbirth and its problems, maternal care during the postpartum period, menopause, characteristics of newborns, infant nutrition and weaning, vaccinations, growth and development in infancy, family institutions in society.

04303-Interior Design of the Housing

General concepts of housing, housing types, housing quality criteria, smart building criteria, Concept foundations and design criteria, Foundations and elements of interior design, Internal systems and their relationship to internal design, Practical training.

04304-Human Nutrition

Introduction on basics of human nutrition, food groups, nutrients (carbohydrates, fats, proteins, vitamins, minerals and water). Nutrients, digestion, absorption, requirements, symptoms of nutrients, increase or decrease. Dietary energy, methods of its assessment, malnutrition diseases due to protein and energy deficiency.

04305-Design and Making of Outdoor Clothing

Basics and elements of clothing design, clothes types, body defects and how to repair it throw clothes design. Practical lessons how to draw basic pattern AND making some clothing items, also how to use ready patterns.

04306-Fiber Textiles and Care Methods

Types Sources advantages and uses of textile fibers The most common weaving structures using in clothes fabrics and the most perfect way in which we can care about it. Practical lessons aim to identity the kinds of fibers and how to care also how to draw the different types of weaving structures

04307-Home Furnishing Fabrics

The common kinds of furnishing fabrics "its properties and how to choose and care about it. practical lessons to learn how to choose different types furnishing for different uses and how about it.

04308-Home Economics Extension and Family Stability

Family stability concept, factors affecting such stability. The role of social, educational, and media institutions in establishing and supporting value which help in keeping the family stable. The role of extension programs in achieving family stability.

04309-Health, Nutrition and Environmental Extension Program

concept, objectives and methods of health, nutrition, and environmental education and its relationship with physical, psychological, social and Health of the individual. Possibilities of including this concept in school curriculum. institutions and organizations responsible for supporting health, nutrition and environmental programs

04310-Leadership Education

leadership concept. Leadership education concept and- principles. The role of the family, educational and social institutions in development Leadership among family members during early age. Different methods used and factor affecting these methods and obstacles facing leadership education.

04398-Selected Topics in Family Affairs Management and Institutes

The student will choose one of these topics according to specialty trend: Consumption Rationalization (concept, objectives, stages, implementations). Linear programming, Household industries, Consumer behavior of family. B- Household Appliances (Issuing classifications, Types, Manufacturing materials, Components parts, issuing of purchase, using and maintenance, Faults “reasons, treatment”). Consumer Protection (Types, Concept, Historical development in Egypt- Dimensions of consumer protection problem).

04402-World Malnutrition Problems

The course includes the world malnutrition problems in general, and in Egypt in particular, which caused by lack of food production, wrong eating habits and believes. Energy and protein malnutrition, dietary anemia, deficiency of vitamin A and iodine, Osteoporosis Food intervention programs, control of nutritional diseases, and the role of governments and international organizations in implementing these programs.

04403- Design and Making Clothes Techniques

Studying Parts of Sewing machine, how to use it, how to care about it and how to repairs simple faults. Also recognize all tools needed in sewing processes in home and factories. Practical lessons in hand made sewing and machine sewing .How to make the basic parts like skirt and how to make clothes finishing.

04404-Methods of Teaching Home Economics

Principles of Home Economics curriculum development, concept of teaching, learning, methods and kinds teaching and limitations of each methods, advantages and disadvantages of each. Principles of choosing the best teaching method according to audience characteristics, subject – matter and available facilities.

04405-Research in Home Economics

Concept and field of research in Home Economics. Application of scientific research methods through a problem, write down scheme of work, collect data tabulation and write the final report. The student should present the results of his research the end of the semester in the presence of staff member and other students. This research includes either or laboratory work

04406- Home Furniture Arrangement

History and furniture styles , Materials , Classification of furniture. The criteria and bases for choosing the furniture of the housing, Principles and bases of furniture distribution in the interior spaces of the housing, Rules and requirements for arranging furniture , Requirements of furnishing process, practical training.

04407-Housing and Service Facilities

Criteria and laws arrangement housing, criteria and laws governing housing and foundations for the design of residential areas in rural and urban areas, Construction methods for residential units, Building materials and insulation, Service facilities inside and outside the dwelling, The optimal needs of residential communities.

04408- Environmental Control for Buildings

The concept of the environment, Elements of the environment, Physical standards for environmentally friendly buildings, environmentally friendly building materials, Water conservation methods inside buildings, Indoor air quality, Lighting and building and the use of colors and their different effects inside the building, Ways to avoid noise inside the building, safety design elements inside the building, Architectural character which Compatible with the environment.

04409-Preparing, Cooking and Food Evaluation

Introduction on food and food science, methods of sampling, chemical properties of nutrients and substances found in foods (carbohydrates, fats, proteins, vitamins, minerals, pigments, organic acids, alkaloids…) as well as the food additives, and evaluating their contents in different foods. Proper and healthy methods of food handling, storing, preparing and cooking. Studying methods of evaluating the organoleptic property of food and the assessment of food safety.

04410-Planning, Meal Preparation and Experimental Cooking

This course includes the international local food needs and recommendations, food Label, conditions to be considered in the planning meals. methods of meals planning Include the basic food groups and food pyramid guide. The system of food exchange. planning, preparing and cooking the healthy and balanced diet and evaluating experimentally by using the different cooking methods

04411-Therapeutic Nutrition

The role of food in prevention and treatment of diseases. Studying the basics of therapeutic nutrition and the role of nutritionist in nutritional care of patients. Methods of prevention and treatments of common diseases that related to Malnutrition such as gastrointestinal diseases, liver diseases, anemia, obesity, CVD, renal diseases, osteoporosis, gout, cancer. Therapeutic rage and its application. Nutrition after surgery, burning, intensive care. Preparing and serving meals in hospitals and nutritional education.

04412-Special Needs Care

Definition of special needs, classification of disabilities, physical, sensory, mental, psychological and social disabilities, prevention and early detection, social and professional rehabilitations, Caring for the disabled within the family.

04413-Health and Social Care for Family Members

Health and social characteristics of the elderly, health and social care for the elderly within the family and society (elderly homes), home accidents, their causes and methods of prevention, children's accidents in nurseries and kindergartens, first aid (its concept and importance), steps of the first and secondary examination of the injured and prioritization of first aid, first aid in Conditions (accommodation of the heart and breathing, fainting, shock, wounds, burns, fractures, poisoning, heat shock).

04414-Family Relationships, Socialization and Guidance of Children:

Fundamentals of right family and marital relations, theories of marital choice, marital adjustment, family break down and separation of spouses, stages of family development, relationships between parents and their children, some family problems (family violence, working mothers, divorce, women supporter...etc.), socialization of children, effective behavioral disciplinary approaches, parental attitudes and its effect on children, understanding child's behavior, communication between parents and their children, dealing with children's problems, characteristics that we have to be acquired from our children.

(05) Agricultural Engineering

05102-Algebra and Analytical Geometry

Cartesian coordinates, lines, tangents, circle, conical sections (parabola, ellipse, and hyperbola). Integration concept, indefinite integration, general methods of integration, definite integration, area and volume calculations, approximation integrals.

05103-Differentiation and Integration

Matrices, determinants, inverse, gauss elimination method to solve equations, partial fractions, functions, limits, general rules of differentiation, derivatives of diff. functions, trig. Functions, high derivatives, partial derivation, applications.

05104-Physics (1)

Properties of materials, thermodynamics, transferable processes.

05105-Physics (2)

Electrical, Magnetism, Optics

05108-Statics and Dynamics

Composition and resolutions of forces, vector and scaler quantities, equilibrium of particles and rigid bodies, hinged system, center of gravity, friction and its application, particle kinematics, straight line motion, motion in Cartesian planes, particle dynamics, newton law, impulse and moment, work and energy, kinematics and dynamics of rigid bodies, rotation about a fixed axis, moment of inertia.

05111-Engineering Drawing (1)

Devices used in engineering drawing, tangent curves, geometrical curves, projection (plan, elevation and side view, and section) isometric projection, and principle skills for Auto Cade.

05112-Engineering Drawing (2)

Steel structure and joints. Columns, trusses. Buildings, retaining walls.

05114-Production Engineering

Introduction to production Engineering and manufacturing properties of metals, casting and formation, parts connections, machine operations on metals, measurement tools, productions type, planning of factories, cost calculation, production monitoring and quality control.

05115-Principles of Programming System

Principles of programming and computer languages, athematic and logic assignment statements, flow charts of program, looping, variables, subroutines, data entry and output.

05121-Introduction to Agricultural Engineering

The concept of Agricultural and Biological Engineering as Engineering disciplines , Local and International requirements of Agricultural Engineering graduates , History and evolution of Agricultural and Bio-Engineering and their branches in Egypt and the world – Engineering of agricultural energy – Economical and environmental effects of energy on agricultural development – Agricultural mechanization – Engineering of irrigation and agricultural drainage – Engineering of agricultural constructions and environmental conditioning- Processing, handling and marketing of processed and Fresh Food- Means and equipment of crops handling in farms – crop storage in Farms.

05203-Principles of Theory of Functions

Hyperbolic and inverse hyperbolic functions, convergence and divergence of series, Maclaurin's and Taylor's expansions- Fourier series. Complex variables, De- Mover's theorem, functions of complex variables, fitting of curves. Bessel and Legendre functions and their properties. Functions of several variables, partial differentiation, ordinary differential equations and their applications in the theory of vibration, partial differential equation, monograms, general methods of integration of more complex functions, multiple integrals and their applications

05204-Differential and Integral Equations

Ordinary Dif. Eq. of first order, linear partial Diff. Eq., Lagrange Eq., Types of Non – linear partial Eq., Application of Diff. Eq., Integration and methods of integrations, exponential functions, hyperbolic and Trig. Functions, linear integral and green theory, integration by error, Gamma, Beta functions.

05211-Principles of Electrical Engineering & Application

Electrical current and Ohms law, potential difference, resistances, theory of electrical circuits, electrical capacitance, alternative current, three phase circuits.

05212-Principles of Electronic Engineering & Application Semi-Conductors

Resistance and condensers, semi-conductors dios, rectifiers, regulators, transistors and it's applications, thermistors, triacs, discs, operational amplifier and it's applications, integrated circuits, Relay', gates controllers, projects as applications.

0215-Theory of Structure and Stress Analysis

Static and internal forces, beams, cantilevers, simple beams, beams with overhanging end, simple frames, three¬-hinged frames, plane trusses and stress diagram, properties of plane, moment of inertia, distribution of normal stresses, simple bending. Stress-strain analysis, normal and shear stresses, torsion of circular shafts, deflection in beams, continuous beams, buckling, introduction to dynamic loads.

05216-Properties and Testing of Materials

Mechanical properties of engineering materials, material behavior under axial static tension, static compression, static bending, static shear, static torsion, strain gauges, impact loads, fatigues of metals, properties of building materials and their testing.

05218-Heat Transfer

Heat and heat transfer, basic laws of heat transfer, conduction heat transfer, Cartesian, cylindrical and spherical heat conduction, electrical representation of thermal resistance, steady and unsteady heat transfer, radiation heat transfer, radiation heat transfer between bodies, forced and free convection, heat exchangers.

05311-Thermodynamics

Heat and work-Total energy of a body-The first law of thermodynamic-Total heat-Entropy-the second law of thermodynamic-Thermal properties of gases-Ideal gases-Standard (ideal) cycles-Air compressors-Vapor properties and tables-The heat pumps.

05312-Internal Combustion Engines

Internal combustion engines types, Engine operating heat cycles, Spark-Ignition engine operation (Otto), Compression-ignition engine operation (Diesel), Diesel¬ engine combustion chamber types, Engine components, Firing order, valves timing, Engine operating parameters and efficiencies, Thermal and mechanical efficiencies.

05313-Fluid Mechanics

Physical properties of fluids-Fluid static and fluid forces of solids-Dimensional Analysis-Flow of an in-compressible ideal fluid-Flow of real fluid-Flow in pipes-Fluid measurements (pressure, velocity, flow rate) orifices –weirs in open channels.

05314-Machines Drawing

Detailed drawing of some engineering designs. Assembling Parts of different engineering equipment. Setup the engineering drawings of the assembled parts, Free-hand sketches of engineering drawings, Auto CAD use in machine drawing.

05315-Theory of Machines

Links and mechanism-Motion diagrams-Displacement, Velocity and Acceleration diagrams-Instantaneous center method-Cams and toothed gearing-Dynamics of machines-Force analysis-Turning moment diagram for cranks and flywheels.

05317-Machine Design (a)

Shaft design, bolting and revising joints, design of power transmission units, belts and bullies, chains, sprocket wheels and gears.

05318-Electrical Engineering Applications

Electrical Power System, Transmission Lines, Cables, Load Study, Power Distribution, Protection, Electrical Machines

05319-Reinforced Concrete

Systems and classification of farm building, effect of loads, properties of concrete and enforced concrete, design of enforced concrete buildings, columns, beams, ceiling, bases, metal constructions designs, moist, heat and voice insulations.

05321-Plane Surveying

Measurements and subdivisions of areas maps and planes, scale and Vernier's, survey instruments, leveling, longitudinal and cross sections and contouring, volumes, bearing and angles, compass and theodolite, tachometry surveying.

05322-Engineering Statistics

Principles of statistics and its importance in scientific research – Descriptive measures – theory of probabilities or possibilities – theoretical distribution – significant tests – analysis of linear regression – correlation – coefficient ANOVA tables – multiple regression analysis of random error – experimental design – analysis of one & two way experimental design – SAS applications.

05323-Hydraulic Pumps and Open-Channels

Operational theory of hydraulic machines (pumps & turbines), man metric pressure and pumps types, velocity triangle and Euler's law, specific speed, centrifugal pumps, performance curves, cavitation's, pump priming, pipe line curve and operating point, series and in parallel operation of pumps, positive displacement reciprocating and rotary pumps, flow in open channels, optimal hydraulic section, specific energy, uniform critical depth, design of open channel with uniform flow.

05324-Renewable Energy in Agriculture

Introduction to energy sources in Egypt and their use, Renewable energy sources, solar energy and how to calculate it and its applications, Designing different solar energy use systems for different applications (solar collectors-photovoltaic cells, Thermal applications of solar energy, Wind energy and its applications, Biomass energy and biogas production systems design

05325-Principles of Measurements and Control

Principles of measurements and calibration, definition and concept of measurement, transducers, electrical circuits to sense and measure changes, noise diminishing, data acquisition and collection, recording and display of data, data loading systems, using computer as a media, principles of control in some variables, introduction to control systems.

05327-Machine Design (b)

Application of design principles in tractors and farm machineries including bearings, springs, joints, clutches and brakes.

05328-Hydraulic Control Systems

Principles of hydraulic and pneumatic systems, basic hydraulic circuits, types of control circuits, hydraulic control system components, preventive maintenance of hydraulic and pneumatic systems, and models of hydraulic and pneumatic systems in agriculture engineering.

05329-Computer Programming

Principles concepts, basics of programming, arithmetic and logical statements, flow chart of a program, data entry, looping, variables, subroutines, output display, Excel program, introduction to internet.

05400-Design and Plan of Graduation Project

Students are divided into groups of four to be assigned to department faculties to suggest, prepare, and present to discuss the graduation project.

05401-Graduation Project

A full day, once a week, for execution of the detailed project of 05400.

05411-Farm Power Engineering

Farm power sources, farm tractors classifications, standard specifications for tractors, tractors power units, power use in tractors, contact devices, brakes and steering devices, tractions theory, forces on tractors, and tractor balance.

05412-Engineering Process of Agricultural Products

Primary operations-operations of mechanical separation crushing and milling, Rice milling Mixing operations Emulsification-Expression and extraction filtration¬-Centrifugation-Materials handling.

05413-Engineering of Farm Structures and Environmental Control

Types of farm structures and principles of theory structure, rural planning, design of country house, green houses, thermal production of cattle and poultry, thermal and moisture balance in farm animal housing, pollution sources, properties of physical and chemical wastes, sources of renewable energy and its application in agricultural structures, planning of dairy cattle housing, calf fattening houses, egg and meat poultry housing.

05414-Planning and Design of Irrigation Systems

Planning the irrigation systems, types, phases, performance and hydraulic of surface irrigation, sprinkler systems (types, components, classifications), sprinkler pattern spacing and selections, hydraulics of irrigation systems (losses, laterals, mainline design, water hammer, pumping plants), design and operation of sprinkler systems (fixed, periodic move, center-pivot, traveler gun), drip irrigation (description, types, components) control of drip system clogging (filtration, flushing, chemical treatments), fertilizer and chemical injection, drip irrigation systems design synthesis.

05415-Engineering of Bio-Systems

Application of engineering principles in biological operations.

05416-Application of Computer in Agricultural Engineering

Introduction to computer languages, arithmetic and logical statements, input and output statements, application programs in: food process engineering, building planning and agric., environmental conditioning, tractors and farm machineries and agric. irrigation and drainage.

05417-Principles of Rationalization and Management use of Energy

Introduction to consumption and production of energy, energy usages in agriculture, energy conversions and management efficiency, energy rationalization in poultry farms, management use of fossil fuels and other energy forms in agricultural production, decision making methods for energy management in farms, farm energy plan options.

05421-Engineering of Farm Machinery (a)

Theories of design and machines operations in seed bed preparation and in planting machines.

05422-Maintenance and Operation of Farm Tractors and Machinery

Construction of farm workshop, fuel and oil types, storage of oils & fuels, engine maintenance of fuel circuit, cooling systems, lubrication system, suction and exhaust system, electrical devices, plant protection and harvesting equipment.

05423-Engineering of Farm Machinery (b)

Theories of design and operation of plant protection equipment, cultivation, spraying, dusting, theories of design an operation of harvesting equipment and post harvesting operation.

05424-Engineering of Land Reclamation Equipment

Introduction, mechanical land clearing, reclamation equipment, bulldozers, loading and transporting equipment scrapers, subsoils plows, levelers, ditchers, ridgers, management of machines and land reclamation equipment.

05425-Engineering of Livestock Equipment

Types and components of animal service equipment and poultry houses, automated milking equipment systems, transport and handling units within animal and poultry production farms, engineering of feed production factories, automated control systems in animal and poultry production farms.

05426-Engineering of Food Preservation by Thermal Treatment

Introduction to food microbial deterioration and spoilage – Microbial inactivation rate under constant temperature – Destruction rates of microorganisms and enzymes and their relations to temperature and time of exposure – Calculations of thermal treatment time for food liquids in continuous flow – Methods and calculation of thermal treatments.

05427-Engineering of Food Preservation by Moisture Reduction and Storage Systems

Free and bound water – Water activity and its relevance to food preservation – Energy and mass balance between agricultural materials and air – The concept of equilibrium moisture content, methods of measuring and calculation equations – Grain drying – Concentration and evaporation operations – Thermodynamics of Food Evaporation.

05428-Engineering of Food Preservation by Temperature Reduction and Handling

Cooling systems (natural, mechanical)- Cold storage of agricultural materials- Food freezing- Thermodynamics of Food freezing of freezing time- Estimating thawing time of frozen food- Prediction of freezing rates and estimating- Systems and design of freezing equipment- Storage of frozen foods.

05429-Engineering of Greenhouses

Position of greenhouse industry, warming of G.H., cooling and conditioning of G.H., design of G.H. and its components plant, environmental control system, aeration system in G.H., management in G.H., regulated plant growth, evaporative cooling systems.

05430-Planning of Rural Area and Structures

Introduction to rural buildings and materials, planning of a farmer house, planning of animal housing and general requirements, open area housing, water supply and sanitary drainage for agric. building for human and animals, introduction to solar energy, properties of air, thermal and mass balance in animal, poultry and green house structures, application in housing methods in accessories introduction to human thermal comfort.

05431-Mechanization of Fish Farming

Definition of aqua cultural engineering design of ponds – water quality requirement for aqua cultural – other structure for fish production (race ways – tanks) estimation of fish feeds. Oxygen – design some of the aeration methods – design of flow system in the culture system. Engineering aspects of raceway design.
Bio filter Design – recirculating aqua culture system design.

05432-Irrigation and Drainage Engineering

Water resources, irrigation water control structure, crop water requirements, soil water plant relationships, canal and drains networks, design of irrigation outlets, irrigation rotation, flow measurements in open channels, occurrence of groundwater in Egypt, types of aquifers, drilling wells, well development, groundwater movement, well hydraulics, drainage, types of subsurface drainage systems, depth and spacing, size of pipe drains, design and layout procedure.

05433-Drip and Micro Irrigation Systems

Drip irrigation characteristics, drip irrigation water requirements, emitter design, wetted area under drip emitters, hose friction and hydraulics, strategies for sizing pipes and hoses throughout a system, emitter clogging, water filtration and fustigation, subsurface drip, example designs, field evaluation of drip irrigation system.

05434-Landscape Irrigation Systems

Introduction to irrigation design, sprinkler heads, positioning sprinkler heads, precipitation rate, application uniformity, sprinkler layout, soil intake rate, water-holding capacity, plant water usage, irrigation interval, depth to apply, piping systems, pressure loss and pipe sizing, water hammer, valves, meters, screens, regulators, controllers, water supply, sport turf irrigation, micro-irrigation, design steps.

Agricultural Science Program Courses (Agricultural Engineering)

05101-Principles of Mathematics

Partial fraction, determinants and matrices, solution of simulations equation by matrices. Functions, limits, derivatives of function, partial derivatives – Application of differentiation, integrals- limit integrals, and applications.

05356-Agricultural Process Engineering

Units' operation (heat transfer & fluid mechanics), material preservation by drying, dryer's types and related calculations, material preservation by heat treatment (pasteurization and sterilization), material preservation by lowering temperature (cooling and freezing), cold storage, material handling.

05357-Equipment and machines of Food Line Production

Dairy products and production lines – Sugar production lines- Oil and hydrogenated oil production lines-starch production lines – Yeast production lines – Feed production lines

05359-Principles of Agricultural Engineering and Surveying

Farm power- engine operation principles-tractor transmission-safe tractor operation-Farm machinery and its relation to agriculture-Introduction to agricultural processing engineering-Planning farm building and environmental control – Types of modern irrigation-Surveying and Budgeting methods.

05450-Selected Topics in Agricultural Engineering

05451-Physical Properties of Agricultural Materials

Introduction, definitions and classification of the characteristics and physical properties of agricultural materials- Determination of moisture content of agricultural materials-Physical characteristics – Statistical applications of materials handling and determining volume distribution of granular materials – Rheological properties of liquids and plastic materials and models of crops – Definition of viscous properties – Aerodynamics properties of agricultural materials- Friction characteristics of grain flow – Thermal properties – Optical properties-Electrical properties – Acoustic properties Magnetic and electrostatic properties – Atomic characteristics of water and food

05455-Engineering of Land Reclamation Equipment

Introduction, mechanical land clearing, reclamation equipment, bulldozers, loading and transporting equipment scrapers, subsoils plow, levelers, ditchers, ridgers, management of machines land reclamation equipment.

05456-Mechanization of Livestock and Poultry farms

Equipment for servicing animals and poultry houses, automated milking equipment systems, conveying and handling units for the engineering of feed production plants.

05457-Building of Livestock and Poultry Farms

Fundamentals of agricultural building planning, animal housing, poultry housing, dairy cattle housing, milking centers, planning and constructions of poultry housing, forage and feed storages, animal environmental control and thermal & moisture balance in animal and poultry houses, construction of fishery plants.

05458-Modern Irrigation Systems

Types, characteristics and performance of surface irrigation system, Components, types and characteristics of sprinkler irrigation systems, performance and hydraulic of Irrigation network (diameters and pressure losses in the network pipes and pump capacity), design and operation of sprinkler systems (fixed, periodic move, center-pivot, traveler gun), drip irrigation system

05459-Tractors and Agricultural Machinery

Functions and types of agricultural tractors, components of the farm tractors, agricultural mechanization and its applications, factors affecting field capacity and operating efficiency, different attaching methods for agricultural machinery, primary and secondary plowing machines, hoeing machines, chemical and municipal fertilization machines, spraying and fogging machines, harvesting machines, Threshers, cleaning and grading machines, combines.

05460-Insect Control Machines

The importance of mechanization in control operations, the most important uses of spraying in agriculture, fluid properties, continuity and energy equation, pesticide preparations, general composition of sprayers and atomizers, hydraulic spraying machines, pumps, productivity and field efficiency calculations, calibration of spray machines, methods of atomizing pesticides, types of hydraulic sprayers, Factors affecting the diameter of spray drops and spray droplet measurement, relations between spraying with sprayers, drifting of pesticides, fogging and mechanical atomizers, mechanical hoeing machines, spraying aircraft.

(06) Dairy Science and Technology

06201-Principles of Dairy Science and Technology

Principles of milk secretion-chemical composition of milk –milk proteins and fat chemistry-the microflora of milk and milk products-the relationship between microbes and dairy products-technology of cheese and fermented milk-technology of ice cream and fat products-technology of dried and condensed milk.

06301-Technology of market and fermented milk

Physical properties of milk-grading of raw milk-pretreatments of raw milk (filtration, purification, cooling, storage-technological treatments (separation, standardization, homogenization)-heat treatments -packaging-storage-cleaning and sanitation of dairy -flavored dairy beverages. Processing of ESL, long-life milk, sterilization and UHT treatments. The theoretical basics for the ultra-filtration. Principles of the milk fermentations-fermented dairy products – processing of different types of fermented milk.

06302-Dairy Microbiology

The roles of microorganisms in milk and the factors influencing its growth. Classification of microorganisms related to dairy products-Group of Gram-positive bacteria-The group of regular Gram positive, non-spore forming. Aerobic gram-negative bacilli. Other groups related to milk and dairy products. Fungi and yeasts and their basic of classification – Rickettsiae, Viruses, Bacteriophage, Mycoplasmas and their role in the dairy industry – Moderns' method of identification of microorganisms.

06303-Milk Secretion and Production

Composition of the udder, types and breeds of milk-producing animals.-The group of hormones controlling the secretion and yielding of milk-milk synthesis: (milk fat synthesis-milk protein synthesis-synthesis of lactose sugar). Factors affecting the amount and composition of milk. Season – lactation period-drying period-Mechanical milking and hand milking – portable milking machines-Fully automatic milking lines. Cleaning, disinfection and maintenance of milking machines. Milk cooling on the farm and during transportation – Mastitis-Production of clean milk on the farm-Milk collection centers.

06304-Microbial toxins and environmental pollutants in milk and milk products

Introduction to toxicology. Source of contaminations. Microbial toxins (Staphylococcus-Salmonella-aflatoxins-Clostridium) – Pesticide's residuals-heavy metals, and radioactive materials in milk and dairy products.

06305-Technology of Dried and Condensed Milk

Basic theoretical of evaporation and evaporators machines used in processing milk and dairy products. Processing of sweeten and non-sweeten condensed milk. Production of milk dried by rollers, and spray driers. Production of instant milk powders. Production of condensed and dried dairy by-products.

- Methods of testing the quality of dried dairy products.

06306-Manufacture of various dairy products

Manufacturing of different dairy products; milk fat products – Cheeses-Ice cream-Fermented milk

06307-Chemistry of milk and its products

The principal constituents of milk. Basic chemical concepts. Basic physical-chemical properties of milk .

Factors affecting milk composition. Classes of milk proteins; Casein, Whey proteins. Methods of isolation of milk proteins. Chemical structure of milk fat. Rancidity of milk fat. Factors affecting the rancidity. Lactose and the roles of lactose in different dairy products. Minerals and salts in milk. Vitamins in milk. Enzymes in milk. Other constituents of milk.

06401-Technology of Cheese

Cheese classification. Scientific basics of cheese processing. Different technological treatments of milk for cheese making – Cheeses processing steps. Modern methods of cheese manufacturing – The production of traditional Egyptian cheeses and the problems related to processing of Egyptian cheeses. Types of processed cheese-basis of manufacture-raw material and ingredients-Calculation the amount of ingredients used in processing. Manufacturing, packaging and storage of processed cheeses.

06402-Applied dairy microbiology and its products

Microbiology of raw milk. Microbiology of heat-treated milk. Microbiology of condensed and dried milk. Microbiology of ice cream. Starter cultures used in making dairy products and their metabolic activities. Microbiology of fermented dairy products. Microbiology of functional dairy products. Microbiology of soft and hard cheese. Microbiology of fat dairy products. Modern microbiological analysis methods of dairy products.

06403-Fat Products and Ice Cream

Gravity and mechanicals methods of milk fat separations. Mechanical separator types. Types of processed creams; Table cream, whipped cream, cooked cream, fermented cream, concentrated cream. Methods and processing steps of butter and margarine. Processing of Samna and Ghee. Types of ice creams. Factors affecting the structure of ice creams. Principles of ice cream processing. Ingredients used in ice creams; fats, solids non-fat, sweeteners and stabilizers. Formulation of ice cream mixtures, calculation methods, preparation the mixtures. Processing steps and calculation the yield. New-trends in the manufacture of ice-cream and frozen dairy products.

06404-Food Additives in Dairy Manufacturing

Sweeteners – stabilizers– emulsifiers- natural and industrial food colors- flavors– antioxidants– water- anti caking- acidifying agents- rennet and milk clotting enzymes– edible salts-antibacterial, antifungals, preservatives.

06405-Chemical analysis of Milk and its Products

Sampling of milk and its products-Determination of physical properties and chemical compositions of milk (pH, acidity, fat, specific gravity, color, lactose, minerals, proteins, Refractive index, electrical conductivity, freezing point). Methods of

separation of different milk proteins; separation by chromatographic methods, separating by Electrophoresis-Methods of determination of quantity and fractions of milk proteins-Methods of Determination of Total and soluble salts (Calcium-Magnesium-Citrate-Phosphate)-Methods of cheese analysis.-Methods of analysis of milk fat products-Methods of analysis of dried and condensed milk.-Methods of estimation of the heat stability of milk.

06406-Processed Cheese

History of procdessed cheeses and its importance-The theoretical basiscs for the manufacturing of processed cheeses. Production of processed cheeses (raw materials-emulsifying salts-water-additives). – Fomulations of the mixtures related to processing. Design of factories of processed cheese. Sensory evaluation and processed cheeses defects.

06407-Functional dairy products

Introduction to Functional Foods-Health Benefits of Functional Foods – Probiotic cultures-Materials supporting the viability of Probiotic cultures. Evaluation of safety of probiotic cultures and materials supporting its activities- Bioactive compounds in milk-The importance of functional foods in the nutrition of Special categories-Effect of functional foods on the microbial balance of the gastrointestinal tract-Functional food composition-Biotechnology in functional foods.

06408-Dairy by-products

Introduction to the course content-types of Dairy by-products-Composition and properties of dairy by-products: Different methods to separate the proteins from the dairy by-products- Different methods to separate lactose, ash and vitamins-Use of dairy by-products in production the beverages-Use of dairy by-products in the backers' products.-Use of dairy by-products in the production of sweetens-Use of dairy by-products in the meat industry and its substitutes-Use of dairy by-products in the manufacture of organic acids and alcohols-Use of dairy by-products in the production of vitamins and mineral salts – Use of dairy by-products in non-food industrial products.

06- Contenu des cours du Programme du Sciences Alimentaires

Cheminement: Technologie Laitière

06201-Principes des Sciences et de la Technologie du Lait

Principes de la sécrétion du lait. Composition chimique du lait. Chimie des protéines et des matières grasses du lait. Microflore du lait et des produits laitiers. Relation entre les microbes et les produits laitiers. Technologie du fromage et du lait fermenté. Technologie de la crème glacée et des produits gras. Technologie du lait condensé et en poudre.

06301-Technologie des Laits de Consommation et des Laits Fermentés

Propriétés physiques du lait de consommation. Tests de qualité et classement du lait cru. Refroidissement du lait cru et modes de transport, de réception et de stockage. Filtrage, purification, tri (isolation), modification et explication de ses propres dispositifs. Traitements thermiques et bases théoriques de la production du lait propre à la consommation. Diverses méthodes de pasteurisation et les équipements utilisés. Opérations d'emballage et récipients appropriés pour le lait pasteurisé, stérilisé et fermenté. Préparation de certains produits laitiers aromatisés. Préparation du lait UHT, du lait stérilisé et du lait longue conservation(ESL). Fondements théoriques de l'ultrafiltration. Base de classification du lait fermenté. Les différents types des laits fermentés. Méthodes de fabrication des laits fermentés.

06302-Microbiologie laitière

Relation entre les microbes et le lait et les facteurs affectant leur croissance. Taxonomie bactérienne. Bactéries Gram positif: groupe cocci et groupe de bacilles non sporulés réguliers et irrégulières, bâtonnets et coques sporulés. Bacilles Gram négatifs anaérobie facultatifs - bâtonnets aérobies à Gram négatif. Autres agrégats liés aux produits laitiers. Classification de moisissures, levures, rickettsies, virus, bactériophages et mycoplasmes. Rôle de microorgnisms dans l'industrie laitière. Méthodes d'identification: SDS-PAGE, G+C% et la technique PCR

06303-Sécrétion et Production de Lait

Composition de la glande mammaire, du pis. Types et races d'animaux producteurs de lait. Hormones qui contrôlent la sécrétion et l'excrétion du lait. Synthèse du lait, synthèse des protéines, des graisses, synthèse du lactose. Facteurs affectant la composition et la quantité du lait. Saison laitière. Continuité - Période sèche - Mécanique de traite automatique et manuelle. Machines à traire mobiles. Installation et pièces. Trayeuses automatiques: types et composants. Nettoyage, désinfection et entretien trayeuses manuelles et automatiques. Refroidissement et transport du lait. Fièvre du pis. Production de lait propre et sain à la ferme. Centres de collecte de lait cru.

06304-Toxines Microbiennes et Polluants environnementaux du Lait et les Produits Laitiers

Introduction à la toxicologie. Sources de contamination. Les toxines microbiennes. Toxines de Staphylococcus aureus. Aflatoxines. Autres mycotoxines: toxines de salmonelles et toxines botuliques. Résidus de pesticides dans le lait et ses produits. Résidus de métaux lourds dans le lait et ses produits. Résidus de substances radioactives dans le lait et ses produits

06305-Technologie du Lait Concentré et du Lait en Poudre

Principe de l'évaporation du lait. Équipements utilisés pour l'évaporation et la concentration du lait. Production du lait condensé. Production du lait condensé sucré. Défauts du lait condensé et du lait condensé sucré. Lait en poudre: séchage en cylindre, séchage par atomisation. Production du lait instantané. Condensation et séchage des sous-produits laitiers. Méthodes d'évaluation du lait en poudre.

06306-Fabrication de Divers Produits Laitiers

Fabrication de différents produits laitiers. Produits de matières grasses laitières. Fromages. Glaces. Lait fermenté.

06307-Chimie du Lait et ses Produits

Introduction à la composition chimique du lait et les propriétés des solutions naturelles. Facteurs affectant la composition du lait. Types de protéines du lait. Méthodes de séparation de ces protéines. Propriétés de la caséine du lait et de ses fractions. Propriétés des protéines de lactosérum et ses importance vitale. Effet des méthodes industrielles sur les composants du lait. Types de lipides du lait et méthodes de séparation. Composition chimique de la matière grasse du lait. Rancidité de la matière grasse du lait et facteurs qui influent sur le rancissement. Composition chimique des glucides du lait et l'effet des procédés de fabrication sur celui-ci. Sels de lait et les facteurs affectant leur pourcentage dans le lait. Vitamines du lait et effet des procédés industriels sur celles-ci. Enzymes du lait et facteurs qui les affectant.

06401-Technologies du Fromage

Fondements de la classification des fromages. Bases scientifiques de la fabrication du fromage. Traitement du lait de fromagerie. Différentes étapes de la production du fromage. Méthodes utilisées en technologie fromagère. Problèmes de la production du lait et du fabrication du fromage en Égypte. Principes de la production du fromage fondu. Matières premiers utilisés pour la fabrication du fromage fondu. Fabrication, conditionnement et stockage du fromage fondu.

06402-Analyse Microbiologique du Lait et ces Produits

Microbiologie du lait cru. Microbiologie des laits traités thermiquement. Microbiologie du lait concentré et séché. Microbiologie de la glace. les ferments utilisés dans les produits laitiers et leur activité métabolique - microbiologie des laits fermentés - Microbiologie des produits laitiers qui soutiennent la santé. Microbiologie des fromages à pâte molle et dure. Microbiologie des produits gras. Méthodes diverses d’analyse microbiologique des produits laitiers.

06403-Technologies des Produits Gras et Glacés

Méthodes de séparation de la crème par gravité et centrifugation. Types d'écrémeuse. Types de la crème: crème de table, crème fouettée, plastique - chauffée - fermentée - concentrée). Méthodes et étapes de fabrication du beurre et margarine. Méthode de fabrication du ghee, sa conservation et son traitement contre la corruption. Groupes des produits glacés laitières. Facteurs affectant la composition de la crème glacée. Matières grasses utilisées dans la fabrication des produits laitiers glacés. Matières laitières non grassées utilisées dans la fabrication des produits glacée laitières. Édulcorants utilisés. Usage des stabilisants et émulsifiants. Calcul de composants du mélange. Étapes de fabrication des produits glacés laitièrs et calcul des revenus. Nouveauté dans l'industrie des produits laitiers glacés et surgelés.

06404-Additifs Alimentaires dans la Fabrication de Produits Laitiers

Édulcorants. Stabilisants. Émulsifiants. Colorants alimentaires naturels et industriels. Arômes. Antioxidants, eau, anti-agglomérants. Agents acidifiants. Enzymes coagulantes du lait et la coagulation par la présure. Sels comestibles. antibactériens, antifongiques, conservateurs.

06405-Analyses Chimiques du Lait et ses Produits

Échantillonnages. Détermination d'acidité. Détermination de gras. Détermination de masse volumique. Détermination de l'indice de réfraction. Détermination de conductivité électrique. Determination de point de congelation. Détermination du lactose. Séparation de la protéine laitière par chromatographie et électrophorèses. Détermination de la protéine qualitativement et quantitativement. Déterminaton des sels minéraux solubles et insolubles (Ca, Mg, K et citrate). Analyses de fromages - Analyses des produits gras. Analyses de lait condensés et en poudre. Éstimation de la stabilité thermique de différents types de lait.

06406-Fromage Fondu

Histoire des fromages fondus et son importance. Bases théoriques de la fabrication des fromages fondus. Production de fromages fondus (matières premières, sels émulsionnants, eau, additifs). Formulation des mélanges liées à la transformation. Conception des usines du fromage fondu. Évaluation sensorielle et défauts des fromages fondus.

06407-Produits Laitiers Fonctionnels

Introduction aux aliments fonctionnels. Avantages des aliments fonctionnels pour la santé. Cultures probiotiques. Matériaux soutenant la viabilité des cultures probiotiques. Évaluation de la sécurité des cultures probiotiques et des matériaux soutenant ses activités. Composés bioactifs dans le lait. L'importance des aliments fonctionnels dans la nutrition des Catégories spéciales. Effet des aliments fonctionnels sur l'équilibre microbien du tractus gastro-intestinal. Composition fonctionnelle des aliments. Biotechnologie des aliments fonctionnels.

06408- Sous-produits Laitiers

Introduction. Types de sous-produits laitiers. Composition et propriétés des sous-produits laitiers. Différentes méthodes de séparation des protéines des sous-produits laitiers. Différentes méthodes de séparation du lactose, des cendres et des vitamines. Utilisation des sous-produits laitiers. Produits en production les boissons. Utilisation de sous-produits laitiers dans les produits des bailleurs de fonds. Utilisation de sous-produits laitiers dans la fabrication d'édulcorants. Utilisation de sous-produits laitiers dans l'industrie de la viande et ses succédanés. Utilisation de sous-produits laitiers dans la fabrication d'acides et d'alcools organiques. Utilisation de sous-produits laitiers dans la production de vitamines et sels minéraux. Utilisation de sous-produits laitiers dans les produits industriels non alimentaires**.**

(07) Plant Pathology Program

07101-Principles of Botany

General morphology and life cycle of flowering plant. Morphology of root and shoot systems. Types of leaves, stems, and roots and their modified forms. Plant cell and cell division. Plant tissues and their functions. Anatomy of roots, stems and leaves. Effect of environmental conditions on plant structure.

07102-Plant Kingdom

Basis of classification of living organisms. Status of the plant kingdom among different kingdoms. Classification of algae, mosses, seed vascular plants, gymnosperms and angiosperms. Study of flowers, inflorescences, types of fruits and methods of their spread. Taxonomy of flowering plants and study of some common plant families of angiosperms.

07104-Principles of Botany and Plant Physiology

Study of plant cell. Photosynthesis, respiration and energy. Nutritional requirements. Growth regulators and reproduction. Plant adaptation and environment.

07201-Microbiology

History of microbiology and its application. Classification of microorganisms, morphology and structure. Bacterial ecology; growth, nutritional requirement and metabolism. Effect of chemical and physical factors. Bacterial genetics and genetic engineering.

07302-General Plant Pathology

Economic impact of plant diseases. Methods of plant pathogens attack of their hosts. Effect of pathogen on vital processes in host tissues e.g. respiration, photosynthesis, transpiration, water absorption etc. Methods of plants defense against pathogen's attacks. Plant disease control: plant diseases caused by fungi, bacteria, virus, nematodes, parasitic flowering plants and abiotic factors.

07303-Methodology of Plant Pathology

Study of plant diseases in the field. Methods of sample collection. Isolation and purification of pathogens on artificial media, maintenance of pathogen's cultures. Artificial inoculation of host at laboratory, green house and field. Preparation of microscopic slides. Usage of references and design experiment.

07304-Plant Virus Diseases

Economic importance. Historical review. Morphology and structure of virus particles. Replication and movement. Symptoms and virus like symptoms. Factors affecting infection and symptoms. Methods of transmission. Virus strains and acquired resistance. Important virus diseases affecting different agriculture crops and their control measures.

07305-Bacterial Plant Diseases

Introduction of phytobactriology. Historical review. Important bacterial diseases attacking different agricultural crops and their control measures.

07307-Plant Physiology

Plant cell, protoplasm, plasma-membrane and permeability. Chemical and physical activities in plants. Acidity, absorption, colloids, diffusion, osmosis, permeability, absorption of water and solutes, intake of solutes, gas exchange, transpiration, mineral nutrition, metabolism, enzymes, respiration, photosynthesis, growth and movement, growth regulators, photoperiodism.

07312-Taxonomy of Fungi

Historical review. Evolution of fungi. Modern classification. Morphology and reproduction in the different classes, life cycle of the important members in the different orders and families.

07313-Physiology of Fungi

Ultrastructural of fungal cell. Nutrition. Genetics. Environmental factors affecting growth. Sporulation and spore germination. Role of hormones in sexual reproduction. Metabolism of carbohydrates, fats and proteins. Fungal metabolites with special reference to antibiotics, spore liberation and dissemination. Biological relationships.

07314-Beneficial Micro-organisms and their Economic Use

Introduction. Identification of beneficial micro-organisms that produce vitamins. Hormones and antibiotics. Organisms used in industry and biocontrol organisms. Non-symbiotic and symbiotic nitrogen fixers along with micro-mycorrhizal fungi and fungi and bio-fertilization of plant. Detoxification of toxic materials through microbial activities.

07401-Relationship Between the Pathogen and the Host

Definition of disease and parasite. Plant pathogens and their methods of reproduction. Release and spread germs. Spread of plant pathogens and factors that help in the distribution of disease. Settlement of plant pathogens. Different relationships between microorganisms. Study of the causal agent and host relationships at the molecular and cellular levels. Role of biochemical signals in relationship of plants and different pathogens.

07402- Fungal Diseases of Plants

Introduction. Studies on important fungal diseases affecting different crops in field and greenhouses and their control measures.

07403-Plant Diseases Diagnosis

Identification of plant diseases. Disease symptoms and their development. Methods of studying plant diseases in field and diagnostic lab. Plant disease symptoms as a tool for plant diseases diagnosis. Plant disease forecasting. Identification of disease incitants associated with disease symptoms. Koch's postulates practicing of plant disease diagnosis of important economic crops.

07404-Diseases of Field Crops

Important diseases affecting economic field crops and their control measures. Intercropping and diseases development.

07406-Seed Pathology

Economic importance. Sampling. Methods of seed testing. Location of pathogens in the seeds. Mechanisms of transmission of pathogens through seeds. Effect of seed-borne diseases on seed quality. Environment influencing host and pathogen condition. Deterioration of stored seeds.

07407-Plant Anatomy

Plant cell. Embryogenesis. Plant tissues and their development. Anatomy of roots, leaves, flowers, fruits and seeds. The relationship between structure of plant organs and their functions. Effects of environmental factors on internal structure.

07408-Plant Nematode Diseases

Historical review. Economic importance. Structure of nematodes. Nematodes classification. Natural enemies of nematodes. Symptoms of nematodes diseases. Methods of transmission. Environmental effect on nematodes. Important nematode diseases affecting different agricultural crops and their control measures.

07409-Non-Parasitic Diseases (Physiogenic Diseases)

Non-pathogenic diseases and their importance. Environmental factors and their impact on plants, air, water and soil pollution and their passive impact on plants. Diseases caused by: environmental factors extremes, organic toxins, and plant mal nutrition. Control of non-pathogenic diseases.

07411-Plant Taxonomy

Historical review. Floral parts and embryogenesis as a criterion used in taxonomy of flowering plants. Current systems of classification. Phylogenetic aspects. Studies of the economically important orders, families and species.

07413-Diseases of Medicinal Crops

What are medical plants? Identification of the most important disease that attack them. Methods of protection and diseases control.

07416-Plant Disease Epidemic and Disease Forecast

The role of environmental factors in plant disease development. Stages of plant disease epidemic development. Inoculum potential and its role in disease severity plant disease assessment method. Plant disease forecasting of some epidemic diseases and plant disease management.

07417-Post-Harvest Diseases

Importance of post-harvest diseases of economically important crops during post-harvest handling course. Disease management pre-harvest in-order to control postharvest diseases. Harvesting methods, maturity stage, commodity physiology, packing methods and types of containers and their role in post-harvest diseases control,

cold storage and modified atmosphere and their role in disease control. Examples of most important post-harvest diseases on economic commodities.

07418-Diseases of Wood Trees

Parasitic and non-parasitic diseases which attack trees and their control methods.

07419-Diseases of Vegetables

Studies on parasitic and non-parasitic diseases of important vegetables crops. Studies on the etiology. Disease cycle and control measures of the most economically important vegetable diseases.

07420-Diseases of Fruit Trees

Parasitic and non-parasitic diseases which affected fruit trees. Studies on the most important diseases of some fruit trees mainly cultivated in Egypt, including the pathogen(s) life cycle(s) and disease management.

07421-Diseases of Ornamental Plants

Important diseases affecting ornamental plants and their control measures in fields, greenhouse and indoor plants.

(08) Department of Animal and Fish Production

08201-Principles of Animal Production

The role of animal production in agriculture, the economic importance of animal production, principles of animal breeding, dairy cattle, beef cattle and dual-purpose cattle, milk and meat production, sheep and goat breeds, the stomach of ruminate animal, physiology of digestion and rumination, the male and female reproductive systems, the hormonal control of estrus cycle, principles of nutrition, roughages and concentrate feeds, nutrient requirements of farm animals. Practical training and exercises.

08301-Farm Animal Physiology

An introduction to animal physiology, the endocrine glands and nervous system, digestion and absorption, blood and body fluids, physiology of adaptation. Practical training and exercises.

08302-Nutrition of Farm Animals

Animal feeds and their chemical composition, conventional and non-conventional feeds, principles of farm animal nutrition, the alimentary tract of growing and mature animals, nutrient requirements of farm animals, feeding of growing calves, feedlot, feeding animals in various physiological status (breeding, pregnancy, before and after parturition, suckling, weaning, … etc.), increasing productivity of farm animals in various environments by nutrition. Practical training and exercises.

08303-Production of Dairy and Beef Cattle

The importance of dairy cattle, the external and internal structure of the udder, evaluation of udder efficiency, systems of milk production, economy of dairy farms, health of dairy cattle, machine milking, choosing dairy cattle, breed. The importance of beef cattle, the development of beef cattle, beef-type and beef breeds, economic and production traits, factors affecting beef production, classification and grading of breeding animals, selecting calves for feedlot, classes of beef cattle, marketing, selecting cattle for slaughter, carcasses and cuts. Practical training and exercises.

08304- Breeding of Farm Animals

Domestication, the origin of breeds, between and within breed variations, variation in economic traits, genetic-environment interaction, correlation among traits, inbreeding, effect of gene homozygosity, coefficient of relationship, line breeding, outbreeding, crossbreeding, heterosis, hybrid vigor, grading up, multi trait selection, genetic correlation, selection index, independent culling levels, minimizing environmental variation, determination of productive efficiency, estimation of sire breeding value, principles of genetic engineering, application of genetic engineering in animal breeding. Practical training and exercises.

08305-Feeds and Feeding

Digestion and absorption in ruminants, the importance of vitamins and minerals in animal nutrition, conventional and non-conventional roughages, rations of animals in various stages, determination of nutritional value of roughages, nutrient requirements of farm animals, chemical composition of feeds and roughages. Practical training and exercises.

08306-Fish Production and Management

Methods of fish farming, biological and zoological taxonomy of fish , the basic structure of a fish farm, fertilization programs to increasing the fertility of fish ponds, fish nutrition, nutrient requirements, feeding rates and granule size of diets for fish at various stages of growth, fish farm management, fish hatching, fishing and sorting, fry nursing, fish rearing at various stages of growth, challenges in fish farms, programs of management of fish during incubation and breeding season, crustaceans and shellfish farming, fresh water and marine fish farms, fish diseases, economic feasibility study. Practical training and exercises.

08308-Animal Nutrition and Metabolism

The interrelationship between man, animal and environment, problems in animal nutrition, the importance of ruminants in feeding of man, chemical composition of plants and animals, factors affecting metabolism, oxidation and reduction, vitamins and metabolism, metabolism of lipids, proteins and carbohydrates, anabolism and catabolism in tissues, enzymes and metabolic processes. Practical training and exercises.

08309-Principles of Chemistry of Nutrition

The digestive system and digestion in farm animals (cattle-buffalo-sheep-goats-camels-rabbits), factors affecting digestion, rumen microbes, research methods in nutrition of ruminants, the biological value of proteins, energy and its utilization in animal nutrition. Practical training and exercises.

08310-Physiology of Adaptation, Growth and Development

Mechanisms of homeostasis, world climate, measurements of animal response to climatic changes, heat balance, physiological reactions to extreme climate, effects of climatic changes on animal production. Growth and development, stages of growth (ante – and postnatal growth), tissue growth (muscle, fat, bone and cartilage), regulation of growth, factors affecting growth. Practical training and exercises.

08311-Artificial Insemination in Farm Animals

Advantages of artificial insemination, semen components, semen collection and evaluation, semen dilution and preservation, insemination of the female animal. Practical training and exercises.

08324-Physiology of Blood, Body Fluids and Blood Circulation

Blood functions, blood composition and characteristics, blood coagulation, blood groups, other body fluids (lymph, cerebrospinal fluid, synovial fluids plasma and tissue fluids), heart, blood vessels, blood circulation. Practical training and exercises.

08401-Formulation of Rations and Animal Feeding

The Egyptian feed industry, the nutritive value of animal feeds, the nutrient requirements of farm animals, factors affecting nutrient requirements, feeding of dairy cattle, feeding of growing calves and calves in feedlot, feeding of sheep and goats, feeding of rabbits. Practical training and exercises.

08402-Physiology of Reproduction **and Milk Secretion**

The male and female reproductive systems, the formation of gametes, the reproductive cycle, synchronization of reproduction, fertilization, pregnancy, parturition, problems in reproduction, the structure of mammary gland, mammogenesis, milk secretion and milk let-down, neuro-hormonal control of lactation. Practical training and exercises.

08404-Genetics of Farm Animals

The importance of genetics, Mendelian genetics, additive and non-additive gene effects, inheritance of traits, chromosome structure, double helix genetic structure, genetic code, dominant and recessive genes, homozygous and heterozygous alleles, complete, incomplete and lack of dominance, sex-linked and sex determined traits, mutations, crossing over, quantitative trait inheritance, population genetics. Practical training and exercises.

08408- Genetic Improvement of Farm Animals

Economic traits of farm animals, objectives of animal breeding, data collection and recording, estimation of animal breeding value, estimation of breeding values using information on full-sibs and half-sibs, progeny test, pedigree test, animal breeding plans, evaluation of animal breeding programmes, genetic diversity and inbreeding, genetic and statistical principles of animal evaluation, genetic trend, quantitative trait loci. Practical training and exercises.

08414-Production of Dairy Cattle

Breeding of dairy cattle, the internal and external structure of the udder, evaluation of udder efficiency in milk production, clean milk production, genetic parameters and environmental factors affecting milk production, selection in dairy animals, systems of production, economy of dairy farms, health of dairy cattle, machine milking, choosing dairy cattle, breed. Practical training and exercises.

08415-Production of Beef Cattle, Carcass and Cuts

The importance of beef cattle, development of beef cattle, beef-type, breeds of beef cattle, factors affecting meat production, classification and grading of breeding animals, selecting calves for feedlot, market classes of beef cattle, marketing beef cattle, selecting animals for slaughter, carcasses and cuts. Practical training and exercises.

08416-Production of Sheep and Goats

Global and Egyptian sheep production, systems of sheep and goat production, classification of the world sheep and goat breeds, reproductive characteristics of sheep and goats, managements of sheep farms, improving the biological efficiency of sheep-meat production, intensification of sheep production by breeding and nutrition, milk production from sheep and goats, wool and hair production, growth and development of the fleece, genetic improvement of sheep and goats. Practical training and exercises.

08417-Modern Techniques in Animal Breeding

Types of genetic markers, molecular markers used in animal production, gene mapping, applications of biotechnology in animal breeding, exploring quantitative traits loci, cloning, applications of cloning technology in animal breeding, genetic engineering, utilization of genetically engineered animals in animal breeding, evaluation of genetically engineered animals. Practical training and exercises.

08426-Management of Dairy Cattle

The role of dairy cattle in world agriculture, breeds of dairy cattle, factors affecting yield and composition of milk, modern parlors, improving the reproductive efficiency of dairy cattle, genetic and environmental factors affecting milk production. Practical training and exercises.

08427-Production of Meat, Carcasses and Cuts

Characteristics of the meat-animal, modern slaughter houses, commercial carcass evaluation of carcasses, evaluation of carcasses in research, carcass cutting and carcass cuts, the axial and appendicular skeleton, the carcass muscles, factors affecting muscle-weight distribution. Practical training and exercises.

08439-Health of Farm Animals

Signs of health and illness in farm animals, causes of disease, mechanical defenses against disease, kinds of immunity, sera and vaccines, disinfectants, animal houses hygiene, environmental and biological pollutants, safety of feeds and water in animal farms, malnutrition and metabolic diseases, external and internal parasites, zoonosis, diseases caused by animal products. Practical training and exercises.

(09) Poultry production

09201-Principles of Poultry Production

Principles of poultry science and Indestry, branches of poultry indestry, origin and domestication, classification of poultry, production of chicks, incubation, reproduction and production of eggs, poultry diseases, feed ingridients, principles of bird nutrition, housing, equipements and environmental requirements, secondary birds.

09301-Genetics of Traits in Poultry

Qualitatives traits in chicken, feather color, comb shape, skeletal structure, blood groups, correlation and regression relationships between traits, methods to improve qualitatives traits. Quantitative traits, body weight, growth rate, egg production, egg weight, chell thickness, reproduction traits, mortality and viability, genetic resistance to diseases, methods of improving quantitative traits.

09302-Poultry Nutrition Chemistry

The basics and history of poultry nutrition, poultry requirements of nutrients, chemical analysis (carbohydrates, lipids, proteins, minerals, vitamins and water).

09303-Poultry Physiology

Study of the physiology science of poultry and study of the physiology of digestion and digestive system, excretion and excretory system, respiratory system, nervous system, musculoskeletal system, circulatory systems, blood circulation, blood and body fluids, as well as study of lymph nodes, immune system and some important glands in the bird's body.

09304-Egg Production and Incubation

Strains, selection of breeding stock and breeder stock caring, production of fertile eggs, types of incubators, handling and storage of hatching eggs,factors affecting hatchability percentages and embryonic growth stages.

09305-Farms of broiler breeders and broilers

Strains, growth in birds, breeding methods, breeding plan, incubation, breeding to improve the carcass meat traits, preparing meat chicks for marketing, commercial production and specialized breeds, nutrition, flock uniformity, production rates.

09306-Meat Production

Standard commercial strains and hybirds for meat production, various feeding programs for meat production, factors affecting growth, quality of meat, handling of young broiler fattening at marketing.

09307-Production of Table Eggs

Standard commercial strainss and hybrids for table egg production, nutrition and lighting programs during growth and production periods, breeding systems for egg production, handling of birds during heat stress, egg quality traits and factors affecting egg characteristics.

09308-Breeding for Egg Production

Strains, breeding for egg production traits, methods of hybrid formation and commercial herds, incubation, characteristics of egg production chicks, brooding, rearing and production of hen breeder for egg production, forcing molt.

09309-Poultry Farms Management

Optimum environmental conditions inside farms of meat and egg production and rabbit farms, various daily mangement procedures, dealing with farm products, poultry farm waste, recent developments in management, feasibility studies for meat and egg production and rabbit production.

09310-Quality of Poultry Products

Study of recent trands in poultry farms (Meat-eggs) to increase the quality of product, quality defination (Meat-eggs) and methods of products marketing (Meat-eggs), meat sources and egg processing, factore affecting quality (eggs, meat), quality traits (eggs, meat) and methods of quality measurement using computer system, slaughterhouses, slaughter methods and poultry waste.

30399-Field Training

This course deals with the practical training of students on field activity and data collection for the field of study, in addition to scientific trips to institutions, facilities, farms and educational institutions and research institutions related to the nature of the study.

30400-Design and Planning of Graduation Project

Introduction to scientific research-its characteristics, stages of preparation, sources and curricula of scientific research and methods. The students are divided into groups of (3-5 individuals) and in coordination with the supervisor, a coordinator is chosen for each group. A proposal for the project is prepared (whether solving a problem-implementing a new idea-implementing a small project). The project proposal is resented and discussed at the end of the first semester (Fall semester).

32301-Foundations of Statistics

Statistics and its functions, practical method, population and samples and their sections, presentation and summarizing of data, descriptive measurements, normal distribution, analysis of variance, hypotheses, statistical models and significance tests, regression, correlation, analysis of common variance, Types of animal and poultry experiments and their design fundamentals and steps. Exercises on simple and complete random experiments. Practical exercises and applications.

09401-Genetic Improvement in Poultry

Gene frequancy, factors affecting gene frequancy, variability, similarity between relatives, genetic parameters, inbreeding, outbreeding , selection, and formation of commercial strains.

09402-Environmental and Production Physiology

Study the relationship of environmental factors and the various environmental constraints presented by the bird to the productive efficiency (egg – meat) and physiological traits (Temperature, ventilation, humidity, management, technology, environmental pollutants), safety margens for nutrients, environmental pollutants, sources of contaminants, and how to control various environmental stress factors.

09403-Non-nutritional Feed Additives and Feed Formulation

Identifing the importance of non-nutritional feed additives, different types of additives, reasons for the use of additives in poultry feed, the effect of these additives on the final product whether meat or eggs, and poultry feed formulation.

09404-Non-Traditional Feedstuffs

Definition of non-traditional feedstuffs, different sections of non-conventional feed (plant and animal residues, food processing by-products, …etc.). The nutritional value of non-traditional feed, its effect on the final product of poultry (meat or eggs).

09405-Farms and Poultry Enterprises

Selecting of farm site/location, requirements for the site, environmental requirements in farms, various types of poultry farms, quail farms, turkey farms, rabbit farms.

09406-Secondary Birds and Rabbits

Quail breeds, houses and equipments, quail egg production, quail incubation and brooding, quail rearing and husbandry. Pigeon strains, pigeon rearing and husbandry, reproduction and incubation,breeding systems for meat production. Duck strains, characterestics of duck breeding, ducks houses, incubation, brooding and rearing, duck nutrition,egg and meat production. Geese strains, characteristics and behavior of geese, geese houses, feeding during egg production, reproduction and egg production, incubation, rearing and husbandry, geese fattening, feather production. Turkeys breeds, housing and equipments, incubation of turkey eggs, brooding of turkey poults, fattening of grower turkey for meat production, nutrition and egg production. Ostrich breeds, characteristics and behavior of Ostrich birds, production systems followed in the Ostrich farms, mating, Ostrich feeding, Ostrich products.

09407-Production of Turkeys and Ostriches

Strains and breeds of Turkeys and Ostriches, domestication and scientific classification of Turkey and Ostriches strains, egg and meat production in Turkeys and Ostriches, nutrition, mangement and housing systems of Turkeys and Ostriches, prevention of diseases, basics of breeding, fertility and artificial insemination in Turkeys, incubating and brooding of Turkey and Ostrich chicks, behavior and habits , feeding and fattening systems for Turkeys and Ostriches. Rearing of grower and hens herd of Turkeys and Ostriches.

09408-Wild and migratory birds (Quails – Pigeon-Ornamental birds)

Breeds of quails and pigeon, origin and migration, behavior and habits, breeding and husbandry of quails and pigeon, egg production in quails and pigeon, incubation and brooding quail chicks, natural incubation of pigeon eggs, nutrition and breeding systems for the production of meat, care of quail and pigeon grower and hens, diseases. Ornamental birds: introduction, cages, nutrition, behaviors, breeds (parrots, canaries, gills, falcons, lunar, peacock, woodpecker), common diseases infecting the ornamental birds.

09409-Water Fowls

Features and characteristics, behavior and habits, breeds and strains, the basics of breeding and selecting of hens flocks, management of stock, nutritional needs and systems of feeding and fattening, reproduction and egg production, incubation, diseases prevention in the ducks and geese flocks.

09410-Rabbits Production

Characteristics of rabbits, history of domestication, breeds and strains, housing and equipments, nutrition, methods of breeding, reproduction and milk production in rabbits, rabbit diseases.

09411-Diseases and Health of Poultry

Sanitary conditions in poultry farms, disinfection and disinfectants, immunity in poultry, poultry diseases, their causes, medicines and vaccines, prevention and vaccination programs.

30401-Graduation Project

Students spend a day at least weekly to implement the proposed project within a course (30400). The supervisor supervises the project throughout the semester. Students submit a report on the project at the end of the second semester (spring semester).

30410-English Language (Scientific Writing)

Concepts related to the field of study.

32401-Biotechnology and its Applications in Animal and Poultry Production Fields

Concept of biotechnology and their uses,biotechnology and animal husbandry programs, Expected Improvement in animal production field by application of biotechnology in animal and poultry production, Egypt and biotechnology. Poultry chromosomes, chicken chromosome map. Correlation groups, applications of genetic engineering in poultry. Practical exercises and applications.

(11) Applied Entomology

11101-Principles of Zoology

Animal cell and tissues (structure and functions). Cell division. Types of reproduction. Gametogenesis. Embryonic development. Introduction to animal classification and nomenclature. General characteristics, structure and function of typical animals of the animal kingdom major groups.

11102-Principles of Entomology

Insect definition. General characteristics of hexapoda, insect behavior, integument, body segmentation and divisions. Respiratory system and respiration mechanism. Digestive system and nutrition. Circulatory system and associated tissues. Excretory organs, reproductive system and types of reproduction. Nervous system, sense organs and insect sensation. Hormones and metamorphosis. Classification of insects.

11301-Economic Entomology

Economic importance of agricultural pests. Fundamentals of pest control. Pest identification and description. Hosts, damage, infestation symptoms, life history, distribution, and control methods. Field crop, vegetables, fruit, forest and wood pests. Ornamental, medical and aromatic plant pests. Stored product pests. Medical and veterinary pests.

11302-Insect Physiology

Integument structure and function, chemical and physical properties. Respiratory mechanisms, insect circulatory system, physical properties and chemical composition of insect blood. Functions of the alimentary system, digestion mechanism of nutrition, excretions, biochemistry of insect muscles. Fundamentals of neurophysiology, physiology of reproduction. Endocrine centers and insect hormones.

11303-Insect Morphology

Body wall and its appendages. Body regions, head structure and appendages, thorax structure and evolution. Structure of legs and wings, abdominal appendages, copulation and oviposition organs. Comparative anatomy of different insect organs.

11304-Beneficial Insects

Introduction on the insect importance to human being. Benefits of insects. Insect predators, parasites, social insects. Silk worms, honey bee and its products.

11305-Economic Acarology

General introduction. External and Internal anatomy. Phytophagous mites, parasitic mites and ticks. Stored product mites. House dust mites. Predaceous mites.

11306-Entomology: Silk worm rearing

History of sericulture, mulberry and non-mulberry silkworms. External and internal anatomy and physiology of mulberry silkworm. Rearing (egg hatching, feeding and cocooning method of silkworm). Diseases and their control methods, cocoons (drying

and cooking). Physical and chemical properties of silk. Visibility studies and new approaches in the field of sericulture industry.

11307-Stored Products Pests

Introduction of stored food products. Factors affecting distribution of insect and animal pests of stored grains and dried food products. Symptoms and damages caused by different pests' groups. Identification of the insect and acari pest infesting stored products. Rodents of the grain mills and their control. Preventive and control methods. Toxic gases and their bioassay. Modern approaches of stored product pests' control

11308-Insect Behavior

Concept of insect behavior-the orientation (kinesis, illumination, thermal, olfaction, humidity). Mechanical, chemical and visual communications between insects. Feeding behavior. Reproduction behavior. Instinct behavior. Inherited behavior. Effect of hormones and pheromones on insect behavior.

11309-Social Insects

Evolution of insect social life. Orders of social insects. Important species of honey bee and their role in crop pollination. Wild bee and their rearing for crop pollination. Ant species and their importance insects. Social behavior of wasps. Social behavior of termites and their economic importance.

11310-Insect Pests and Honey Bees

Introduction on insect pests and principles of pest control. Economic importance of insects, hosts, symptoms and damage. Symptoms of infestation by some economically important pests and their control methods. Introduction on honey bee rearing. Honey bee colony and its activities. Honey bee different products. Feasibility study for establishing an apiary, queen rearing. Honey bee disease and enemies.

11311-Insects Transmitting Plant Diseases

The relationship between plants and insects. Types of coexistence between insects, microorganisms and insects that transmit diseases, plants. Division of insect transmitters plant pathogens, their physiology and anatomy. Examples of the most important diseases transmitted by insects. Different methods of controlling insects that transmit plant pathogens.

11313-Parasitology

Principles of parasitology. Taxonomical position of parasites species and the relationship with their hosts. Parasitism and its factors. Diagnosis of parasitism. Prevention of parasitism. Primary parasites, parasite worms and their methods of parasitism. Parasitic arthropods.

11314-Principles of Embryology

Sex cells (origin maturation and fertilization). Embryonic development. Differentiation of tissues and organogenesis of animals especially insects and vertebrates (e.g. amphioxus, frog, birds and mammals).

11315-Green-house Pests and their Control

Introduction on insect pests, their taxonomy, economic, Kinds of green houses, pests of greenhouses plants and their control, Symptoms of infestation, life history and control of insect and mite pests of greenhouses plants, Integrated pest management in green house.

11401-Insect Ecology

Insects in the ecosystem (population, community, habitat and ecological niche). Physical environmental factors (temperature, humidity, light, atmospheric pressure, soil, air and water currents). Biological environmental factors (food, competition, and natural enemies). Population growth and regulation of insect reproduction (biotic potential, population spread, and survival potential). Population growth curves. Population dynamics. Population density (economic injury level, economic threshold, population density estimates, statistical distribution of insects).

11402-Insect Taxonomy

Taxonomy (history). Taxonomical categories. Classification and higher categories. Entomological nomenclature. Taxonomic characters. Insect collection. Individual variations. Taxonomical keys. Phylogeny and relation to other arthropods. preparation of taxonomic papers.

11403-House Pests

Introduction on insect and animal pests associated with house, study on description, life history, damage and control of insect house pests, house acari which transmit and cause human diseases and their control, stored grains and food products mutes, wood and furniture pests (wood borer beetles and termites). Ornamental plants and house garden pests, rodents and their control.

11404-Biological control

The scope of biological control (ecological basis, history and development), entomophagous insects (predators and parasites) insect pathogens (bacteria, virus, fungus, protozoa, nematodes and rickettsiase), procedures of bioagents introduction and limiting factors of their success, the future of biological control, method of biological control, other biological methods of pest control.

11405-Principles of beekeeping

Establishment of apiary and visibility study ,beekeeping history ,honey bee species and races, honey bee colony, bees language, colony defense system and bee venom, swarming, honey bee colony internal and external activities, pheromones, wax production honey production and influenced factors, physical and chemical properties of honey, rearing and, production of queens, enemies, pests and diseases, poisoning of honey bee with pesticides and methods of protection.

11406-Bioassay

Introduction on bioassay. Determination of the susceptibility and resistance. Bioassay methods. Statistical analysis of bioassay results. Factor affecting toxicity lines. Bioassay of insect growth regulators.

11407-Nanotechnology in the Field of Entomology

Introduction on nanotechnology. Application of nanotechnology in the field of economic entomology. Control insect pests using nanotechnology.

11408-Entomological Biochemistry

Roles of insects in nature. Effect of the natural products on insects. Hormones and pheromones. Physiology of nervous system and its inhibition.

11409-Medical and Veterinary Insects

Medical importance of insects and other arthropods to human and animals. Classification in relation to transmission of human and domestic animal diseases (bot-flies-mosquito-lice-fleas, etc.). Biology, behavior and control of medical and veterinary insects.

11410-Insects Hormones and Pheromones

Hormones discovery. Sites of hormones release. Chemical composition of hormone. Pheromone importance. Hormones mimics.

11411-Physiology of Invertebrate Reproduction

Types of reproduction of invertebrates. Structures of different types of reproductive systems. Reproductive organs and influencing factors. Reproduction of primitive invertebrate. Reproduction of platyhelminthes, nematodes and annalids. Reproduction, physiology of insects.

11412-Integrated Pest Control

Introduction on the roles of insects in nature, factors affecting insect control, non-chemical control, agricultural and legislative control, biological control, genetically control, integrated control programs, important chemical materials used in pest control.

11413-Trees and Manufactured Wood Pests and their Control

Economic importance wood insects. Description, hosts, symptoms of infestation, life cycle and control methods. Termites, wood boring beetles and mites. Wood treatments by heat and evaporation and the required cautions.

11414-Honey Bee Projects and Medical Importance of its Products

Apiary establishment and its economic feasibility. Small projects of honey bee keeping, selection of apiary location. Physical characters and chemical composition of honeybee and its production methods. Medical importance of honey, royal jelly. Bee venom and propolis. Pollens and bee wax. Standard specifications of honey bee products.

11415-Field Crops and Horticultural Pests

Introduction on field crops and horticultural pests. Economic importance. Symptoms of infestation, identification, hosts, life cycle. Control of field crops, vegetables, fruit tree, ornamental plants and medicinal and aromatic plants.

11416-Medical and Veterinary Acarology

Introduction on acarology. Taxonomy. Economic importance. Parasitic mites. Transmission of diseases by mites, house dust mites and allergy, itch mite, tick's identification (soft and hard). Disease transmission by ticks. Effect of tick's bite on animals and human being. Control of ticks and mites.

11417-Principals of Economic Zoology

Parasites, parasitism, parasitic protozoa. Relationship between worms, arthropods, mollusks and plants. Economic importance of marine animals, fish, rodents, birds in agriculture field.

11418-Economic Zoology

Parasites and parasitism, parasitic protozoa. Relationship among different helminthes, arthropods, mollusca and other animals and plant crops. Economic importance of aquatic, animals and fishes in Egypt. Rodents and birds' roles in the field of agriculture.

11420-Entomology Pathogens and their Modern Applications

Introduction on entomopathogens: bacteria, viruses, fungi, nematodes and others.

11421-Insect Natural Enemies and their Modern Applications

Introduction on insect natural enemies. Predators and parasites and their role in integrated control programs.

11494-Special Studies

Special modern subjects in the field of economic entomology and insect control. Research studies in the field of Entomology.

(12) Vegetable Crop Department

12201-Principles of Vegetable Crops Production

Studying the principles of vegetable crop production staring from planting till harvesting and studying the factors affecting the quality and modern improving production methods, the nutritional and economical value of vegetable crops, environmental factors affecting growth and vegetable crop production, propagation, soil preparation, planting methods, protected agriculture, crop rotation, the role of breeding in improving vegetable crops.

12301-Production of Vegetable Crops

Vegetable's production of family Solanaceae- family Compositae-family Cucurbitaceae – family Leguminosae- family Umbelliferae- family Alliaceae and other vegetable families- Production of mushroom.

12302-Protected Vegetable Cultivation

Introduction to the management of protected houses, the history of protected agriculture, local and international statistics on protected agriculture, the importance of greenhouses, the advantages and disadvantages of agriculture under protected agriculture-types and forms of greenhouses-environmental factors affecting production under protected agriculture-methods of controlling environmental conditions-preparation and establishment of greenhouse for planting (soil washing, tillage and soil preparation, soil sterilization), planting medium, seedlings (transplants) production methods, irrigation of vegetables under protected agriculture, fertilization of vegetables under protected agriculture, breeding and trimming (pruning) of plants, improving the fruit setting and different methods used for that. Farming process under protected agriculture for some important vegetable crops (tomato, pepper, cantaloupe, cucumber, and common bean). Production of some vegetable crops under plastic tunnels (strawberry, cucumber, cantaloupe, tomato, green bean, pepper, watermelon, summer squash, Jew's mallow, and okra)-integrated pest management under protected agriculture.

12303-Physiology of Vegetable Crops

Introduction to the physiology of vegetable science and its relation to other sciences definition of growth and development- The productivity of photosynthesis and the factors influencing it- The different growth stages of vegetable crops- Flowering (flowering physiology- vernalization and its applications)- Environmental factors affecting the growth and development of vegetable plants- Effect of temperatures on the different growth stages of vegetable crops- Effect of light on growth of vegetable crops- Effect of light, temperature, and flowering and fruiting physiology- Effect of other weather factors and methods of measuring the efficiency of the heat factor- Effect of ground factors on the growth of vegetable crops- Nutrition of vegetable crops and symptoms of elements deficiency- The effect of the plant growth regulators (hormones) on growth of vegetable crops- Crop physiology.

12304-Production of Root, Tuberous and Bulb Vegetables

Economical and nutritional importance for root, tuberous and bulbous vegetables- The main environmental factors influencing the production of these crops under Egyptian conditions- Propagation technology of root, tuberous and bulbous vegetables- The main problems of the production of these crops under Egyptian conditions and the extent of the productivity and quality of these crops under the conditions of the expected climatic changes during the next years- Methods of producing this group of vegetables under suitable and unsuitable conditions- Good agricultural practices for production- The relationship of physiological growth stages to the needs of these crops from irrigation and fertilization- The most important results of modern research affecting quantitative and qualitative production- The most important varieties appropriate for planting under different environmental conditions and the productivity of these crops- Establish of different programs for fertilization or irrigation appropriate for production under different conditions.

12305-Production of Non-traditional Vegetable Crops

Introduction to the importance of production of non-traditional vegetables in Egypt and their export opportunities- Production of some non-traditional vegetable crops belong to the Leguminosae family (beans: lima beans and siefa beans)- Production of some non-traditional vegetable crops following to the Cruciferae family (Brussels sprouts- Broccoli, kohlrabi and red cabbage) Production of some non-traditional vegetable crops belonging to the Solanaceae family (Cherry tomato- ground cherry)-Production of some non-traditional vegetable crops belonging to the family of Cucurbitaceae (pumpkin- snake cucumber-Saur melon)- Production of some non-traditional vegetable crops belonging to the Composite family (artichoke- Jerusalem artichoke- chicory- endive)- produce some of non-traditional vegetables of the Alliaceae family (leek- Egyptian leek)-produce one of non-traditional vegetables of the Liliaceae family (asparagus)- Production of some non-traditional vegetable crops belonging to the Malvaceae family (okra- Egyptian mallow)-Production of some non-traditional vegetable crops belonging to the Umbelliferae family (sweet fennel- parsley- dill- celery). Definition of agricultural fungi and mushroom production.

12402-Management of Vegetable Crops in the New Lands

Definition of new lands in Egypt and its areas- Available of water resources- Types of water irrigation- Effect of increase and shortage of water quantities on quality and productivity of vegetables- Modern irrigation systems in vegetables-Drip irrigation systems: disadvantages and advantages- Components of modern irrigation systems in new lands and standard specifications used in vegetable cultures- The irrigation needs of vegetable crops and the factors influencing them. Estimation of irrigation water use efficiency for vegetable crops and affecting factors- Estimation of irrigation process efficiency on vegetable production- Fertilizing with irrigation water (Fertigation) in modern irrigation systems- How to develop irrigation systems used and increase the efficiency of irrigation water and fertilizers- Applied research in the production of vegetable crops in new lands.

12403-Soilless Culture for Vegetable Crops

Definition of soilless culture and aquaculture- advantages and disadvantages of soilless culture and aquaculture- Water culture (Hydroponic) types (sand cultures, gravel cultures, straw cultures, rock wool cultures, peat moss mixtures and other materials)- Nutrient solutions, water properties used in the preparation of nutrient solutions- Concentration of nutrients in nutrient solution and ionic balance among them. Factors affecting on selection of appropriate concentration of nutrient elements- Damage of nutrient resulted from concentration increase or decrease- Points to be considered when preparing nutrient solutions- liquid system (Water culture or Hydroponic) where no solid medium used for root fixation (Deep water cultures, Floating hydroponics system-Nutrient film technique NFT)- design of different nutrient solutions cultures- produce some kinds of vegetables under soilless culture systems.

12404-Breeding of Vegetables Crops

Introduction to the concept of breeding vegetables and their purposes and their relation to other sciences- Historical overview of the development of breeding science- The bases and genetic rules used in the breeding of vegetable crops- Methods of estimation of some genetic standards used in the breeding of vegetable crops-Methods of reproduction and pollination and its importance in breeding vegetables- Plant population types in vegetable crops-the bases and rules necessary to be taken into consideration in breeding programs-specifications of plant breeders- Breeding methods for self-pollinated vegetable crops-Breeding methods for cross-pollinated vegetable crops- some phenomena used in breeding programs of vegetables (sterility and incompatibility and their types)- Radiation and its benefits in creating of mutations and their roles in breeding of vegetable crops- The use of polyploidy in vegetable crops – Inbreeding and hybrid vigor in the breeding of vegetable crops- The use of modern biotechnology and its use in breeding programs to improve vegetables.

12405-Breeding Vegetable Crops to Tolerate Environmental Stress

The objective of this course is to identify the different environmental conditions that are not suitable (environmental stress) for the vegetable crops, particularly the water stress, salt stress, heat stress, and the study of appropriate breeding methods to tolerate the vegetables for these conditions, and to clarify the most important applications in this field. The curriculum includes the following contents: Introduction and identification of the different environmental conditions facing vegetable crops-Breeding programs that can be applied in this direction-Methods of breeding to tolerate vegetables for salinity-Methods of breeding for tolerating vegetables to water stress (drought)- Methods of breeding to tolerate vegetables for low temperatures-Methods of breeding to tolerate vegetables for high temperatures- Methods of breeding for pest control- Some applications to tolerate vegetable crops to different environmental conditions.

12406-Production of Fruit and Leafy Vegetables

Economical and nutritional importance for most important fruit and leafy vegetables-The vital environmental factors affecting the production of fruit and leafy vegetables-The most important problems for production of these crops under Egyptian conditions and the extent of the productivity and quality of these crops under the conditions of the

expected climatic changes in the next coming years- The production methods of this group of vegetables under the suitable and non-suitable conditions- Good agricultural practices for production- The relationship of different growth stages to the requirements of these crops from irrigation and fertilization- The most important results of recent research affecting production (quantity and quality)- The most important varieties proper for culture under different environmental conditions- Establish different programs for fertilization, irrigation and other appropriate care processes for production under different conditions.

12407-Seed Production of Vegetable Crops

Introduction to the definition of seed and the relationship of production of vegetable seeds with other sciences- The definition of growth and its associated changes- Environmental factors affecting the growth, development and forming of vegetable crops seeds-Genetic factors affecting the production of vegetable seeds- Methods of pollination and flowering physiology and seed production- Dormancy of seeds and affecting factors- Propagation methods of vegetable seeds- Seeds tests and factors that carried out to improve germination- The effect of plant hormones on the production of vegetable seeds- Breeding programs used to improve the production of vegetable seeds- Commercial production of vegetable seeds- Harvesting, extraction, handling and storage of vegetable seeds.

12408-Postharvest Treatments for Vegetable Crops

Introduction to postharvest physiology and its relation to other sciences and its role in reducing losses in vegetable crops after harvest- Types of fruits in vegetable crops and their chemical composition- Maturity indices- The stages of growth and development of fruits and changes in the fruit that occur during different stages of growth and harvesting systems- Post-harvest biochemical changes- Factors influencing quality in vegetable crops pre- and post- harvest- Respiration and its impact on quality of vegetable crops- The role of ethylene in the ripening of vegetable crops- Physiological deviations that occur in fruits during handling and storage processes- Handling and preparation of vegetable crops (sorting, grading, washing, packing and packaging)- Pre-cooling methods, transporting, shipping and storing vegetable- Complementary technology to prolong the shelf-life of fruits after harvesting.

12409-Production of Organic Vegetable

Introduction to the relationship of organic production with increasing export capacity of Egypt- The export opportunities available- The most important export organic vegetable and the export window of organic vegetable- Organizations interested in exporting organic vegetable- The most important obstacles and problems facing the expansion in organic production- Organic farming in Egypt and in the world and the advantages of organic farming Organic farming definition- Comparison between organic farming and traditional agriculture- Requirements of organic farming- Agricultural practices under the organic farming system- Steps to convert a traditional farm to organic under the regulatory standards- The different materials and sources allowed for organic production- Organic fertilizer, its conditions and methods of production- The production methods of the compost and the conditions of its use-

Sources of bio-fertilizers and soil conditioners under organic farming system- Bio-fertilizers and how to use- Biological control for insect and diseases in organic farming- organic fertilizers, quality control of organic products- Production of some vegetables for export under organic farming system: strawberries, cucumber, cantaloupe, tomatoes, green bean, pepper, watermelon- summer squash- Jew's mallow- okra- Appropriate harvesting methods and post-harvest operations and processing for marketing under the organic system.

12410-Selected Topics in Vegetable Production Technology

A specialized study for one of the topics in the field of vegetable crops production including: How to prepare economic feasibility studies for vegetable production projects- Applications of vegetable production under greenhouses- Applications of the production of grafted seedlings (transplants) of cucurbits and tomato- Soilless production for leafy and fruit vegetables- Applications of the production of different vegetables seedlings (transplants)- Vegetable production in roof gardens- The production project of organic vegetables- The project of production of seeds of vegetable crops.

12411-Recent Research in the Field of Vegetable Production

A detailed study of modern scientific research carried out either at home or abroad in the field of breeding and physiology of production, processing, trading and storage of vegetable plants- The study of various methods of scientific researches that aimed to produce and improving varieties and producing seeds of vegetable crops- Study of scientific researches related with techniques and modern agricultural applications that aimed to maximize the utilization of environmental factors for increase production and improve quality.

(13) Floriculture, Ornamental Horticulture and Landscape Gardening Department

13201-Principles of Floriculture and Landscape Gardening

Sexual and Asexual reproduction of ornamental plants, its maintenance, factors affecting its growth, nurseries, its component, groups of ornamental plants, economic crops, principals of landscape designing, landscape styles, history of garden design, types of gardens. Identification of flowers and ornamental plant, its propagation methods, maintenance, production and field trips to gardens and nurseries.

13303-Groups of Flowers and Ornamental Plants

Identification of different flowers and ornamental plant groups (Herbaceous – lawns-green house plants- aquatic – cacti and succulent plants- climbers and creepers – trees and shrubs – palm and palm like trees – methods of propagation – maintenance – uses in landscape.

13305-Nurseries, Greenhouses and Commercial farms

Types of nurseries, choosing the site and its properties, different buildings in the nursery, types of greenhouses and their uses, environmental conditions in greenhouse and how to control, the production of some ornamental crops, cooling and heating system in greenhouses, fertilization, irrigation, field trips to nurseries and commercial ornamental farms.

13304-Production of Medicinal and Aromatic Plants

Classification, propagation methods, cultivation, maintenance and production, its groups, importance, drying methods, transporting, storage, its production in Egypt for local and exportation uses, methods of drying and storage, extraction of essentials oils, Identification of medicinal and aromatic herbs, field trips to production farms and extraction factories.

13306-Production of Economic and Exported Ornamental Plants

Production sites, external and internal factors affecting economic plant production, seeds, soil, fertilization, irrigation, temperature and light, relative humidity, wind, gases, growth regulators, pest control, production of new varieties, the most important economic crops in Egypt and their production, protection, and effect of environmental factors. Identification of flowers and ornamental economic plant crops, propagation methods, maintenance and production, field trips to gardens and flower nurseries.

13308-Lawns and Ground Covers

Importance of lawns and ground cover in landscape, types of ground cover and lawns, methods and procedures for lawn installation, soccer field, cultivation and its requirements, maintenance, mowing, edging, soil aeration, irrigation, fertilization, weed control and disease control. Ground cover uses in landscape and its care and maintenance, identification of lawns and ground covers, characterization of

international sport fields, lightening in sport fields, types of plants used and their specifications.

13401-Landscape Designing

History of garden designing, styles of landscape design, landscape design components, explaining different types of gardens, steps of garden installation, maintenance (gardens in Egypt, public gardens, private gardens, factory gardens, children Gardens, rock gardens, desert gardens, countryside gardens, roof gardens and others), Practicing drawing and designing different types of landscape designs.

13403-Physiology of Ornamental Plants

Studying environmental factors affecting growth, flowering, quality of flower production for ornamental plants, hormones, growth regulators and their uses, application in production of ornamental of plants. Identification of flowers and ornamental plants, propagation methods, production, and observations on the effect of these factors.

13405-Uses of Medicinal and Aromatic Herbs and Their Active Ingredients

Groups of active ingredients in medicinal and aromatic herbs (volatile oils, Alkaloids, Glycoside…. etc.) their classification, extraction method, its effect on plants and on human. Identification of the most important medicinal herbs.

13407 Uses of Plants in Landscape Design

The functional uses of ornamental plant in landscape, repairing building, reducing noise, wind break, reducing light reflection, reducing high temperature, increasing humidity and others. Aesthetical uses of ornamental plants in the landscape (accent, hedges, beds…etc.), Identification of the most important plants needed in landscape.

13402-Flower Arrangement and Interior Design

Arranging cut flowers, factors affecting flower harvesting, prolonging vase life, accessories used in flower arrangement, fundamentals of flower arrangement, different schools of flower arrangement, special flower arrangements and special occasion, dried flowers, flower language, different uses of ornamental plants in interior designs, practical session for different types of flower arrangements, flower exhibition, plants for interior design and building decorations.

13404-Trading and Storing of Flowers and Ornamental Plants

Definition of cut flower, methods, and time of harvesting flowers, harvesting stage, physiological and chemical changes that occur to cut flowers during and after cutting, environmental factors affecting harvesting, storage of flowers, suitable storage temperature and its effect on flower quality, shipping and exporting of cut flowers.

13406-Breeding of Flowers and Ornamental Plants

Genetic bases for flower and ornamental plants breeding, dominance, over dominance, degree of inheritance, duplication of chromosomes, incompatibility and sterility, mutations, pure breeds, methods of breeding ornamental plant, tissue culture, biotechnology, practical application for ornamental of plant breeding.

13408-Tissue Culture and Biotechnology of Ornamental Plants

Components of tissue culture lab, tools, required chemicals, culture media, rooting and callus induction, practical application of biotechnology in ornamental plants, haploid plants (anther culture, ovary culture), Virus free plants, embryo culture, endosperm culture, vegetative hybridization, cytology, genetic engineering, biotechnology.

13410-Landscape of Cities and Villages

Importance of green areas in cities, landscape of green areas, classification of cities, types of streets, parking areas, landscaping city centers, landscape of public squares, landscape of residential areas, sport fields, landscaping industrial areas, resorts, villages, and public gardens.

13412-Classification of Ornamental Plants

History of classification, different ways of classifying ornamental plants depending on uses in landscape (annuals, perennials, flowering bulls, lawns, aquatic and semi aquatic, shade and greenhouse plants, cacti and succulent plants, climber and creepers, trees, shrubs). Classification depending on plant kingdom (Angiosperm, gymnosperm, monocots, and dicot), classification depending on chemical composition of plants.

(14) Soil and Water Sciences Department

14201-Fundamentals of Soil Science

Concept of soil. Soil formation and its morphological, physical, chemical and biological properties. Mineralogical composition of soil. Introduction in soil survey and classification. Soil nutrients and soil fertility. Organic soils.

14301-Soil Genesis and Classification

Factors and processes of soil formation. Soil morphology. Basic characteristic soil horizons. Soil classification systems.

14302-Environmental Soil Chemistry

Mineral and organic composition of soils. Effects of the solid phase constituents on chemical properties. Soil solution. Forms and activities of ions and ionic equilibrium with the solid phase. Electrochemical properties of soils. Ionic exchange and absorption reactions. Oxidation and reduction reactions. Fate and behavior of pollutants in soil.

14303-Environmental Soil Physics

Physical and mechanical properties of soil and methods of their determination. Energy and matter transfer processes (water, heat and air) in soil.

14304-Environmental Soil Microbiology

Soil as a medium/environment for microbial growth. Microorganisms in soil. Biological cycles of carbon, nitrogen, phosphorus, Sulphur, iron and manganese in soils. Genetic engineering and improving the efficiency of beneficial soil microorganisms. Relationship between soil microorganisms and plants. Soil organic matter. Role of organisms in removing pollutants from soil.

14305-Plant Nutrition

Classification of nutrients. Physiology of nutrients in plants. Mechanisms of water and nutrient transport in plant. Role of nutrients in plant growth and crop production.

14306-Geographic Information Systems (GIS)

Introduction to geographic information systems. System elements. Information sources and technologies of information collection. Geographic information processing. Analysis of space imagery information and accompanying field and laboratory analyses. Collecting and presenting information on land maps.

14307-Fundamentals of Remote Sensing

Definition of remote sensing. Types of information available from remote sensing. How to use satellite information. Processing satellite imagery. Applications of remote sensing technologies in soil and water sciences. Remote sensing and types of soil maps.

14308-Properties of Colloids

Definition of the science of colloids. Classifications of colloids. Optical, electrical, kinetic, surface and mechanical properties of colloidal systems. Examples of colloidal systems.

14309-Land Reclamation and Improvement

Types of soils, their properties and methods of reclamation. Evaluation of land reclamation projects. Methods of improving agricultural lands and raising their productivity. Systems of land reclamation and sustainable improvements.

14310-Petrology and Mineralogy

Chemical composition of different divisions of minerals and their origination (formation) conditions. Physical, crystal, optical and radiative properties of minerals. Rock cycle in nature. Properties and classification of igneous, sedimentary and metamorphic rocks. Microscopic study of minerals and rocks.

14311-Meteorology (Fundamentals and Applications)

The study of the elements of climate. Analysis of climatological information. Experimental methods of determining climatic elements and evapotranspiration. Using computer programs to predict changes in agricultural climatic changes.

14312-Soil Survey and Evaluation

Basics of soil survey. Methods of soil survey. Methods of soil evaluation. Utilizing computer programs in soil evaluation.

14401-Laboratory Analyses of Soil, Water, Plant and Fertilizer

Chemical properties soil. Water analysis. Plant sampling. Plant digestion. Determination of elements in plants. Determining nitrogen, phosphorus and potassium in commercial fertilizers. Determination of microelements in soil, plant and fertilizer. Instruments of precision analysis.

14402-Soil Fertility

Chemistry and reactions of nutritional elements in soil and factors determining their availability(suitability). Types of mineral and organic fertilizers. Fertilizer requirements, methods of applying fertilizers. Tests and methods of evaluating soil fertility. Reactions of soil organic and mineral constituents with nutritional elements.

14403-Organic Agriculture

Basics of organic agriculture (organic farming). Fertilizing in organic agriculture. Legislations (laws) organizing organic agriculture in the world and in Egypt. Organic and biological fertilization. Pest resistance (pest control) in organic agriculture. Measurements (Standards) required to determine the quality of crops produced under organic agriculture.

14404-Irrigation and Agricultural Drainage

Studying different irrigation and drainage methods. Required amounts of irrigation water. Irrigation intervals. Irrigation efficiencies. Infiltration (percolation-seepage) of water in the field. Factors determining the selection of irrigation or drainage system. Lining of open canals. General planning of irrigation and drainage networks.

14405-Fertilizers and Fertilization

Nitrogen, phosphorous, potassium mineral fertilizers. Micro elements fertilizers. Chemistry of fertilizer elements in soil. Forms of fertilizer elements uptake by plants.

Manufacturing of mineral fertilizers in Egypt. Methods of transporting, handling and storing fertilizers. Environmental laws related to manufacturing and using fertilizers (international and local examples). Methods of fertilization. Methods of improving the efficiency of using mineral fertilizers.

14406-Management of Agricultural Wastes

Sources of agricultural wastes. Morphological, chemical, physical and biological properties of agricultural wastes. Methods of collecting, transporting and handling agricultural wastes. Producing organic fertilizers from agricultural wastes. Producing other products from agricultural wastes. Economical evaluation of agricultural wastes and their products.

14407-Soil and Water Pollution and Remediation

Chemical, biological and radiative pollution of soil and water. Water as a source of pollution of air, water and soil environments and surrounding systems. Land (soil) as a landfill (dump) for polluted wastes. Pollution of ground water. Pollution from pesticides and heavy metals. Chemical, physical and biological remediation of pollution. Methods of predicting contamination of soil and water.

14408-Water Resources Management

Hydrologic cycle. Monitoring (measuring) quantities of water resources. Water in soil and methods of its measurement. Efficiency of water conveyance from water sources. Water distribution in fields. Controlling water discharges. Utilization of computer programs for predicting water resources deterioration.

14409-Groundwater Hydrology

Hydrologic cycle of water resources. Sources of groundwater. Classification of groundwater. Groundwater dynamics and their applications on water flow. Methods of discovering groundwater. Specific yield of water-carrying aquifers.

14410-Saline Agriculture

Definition of saline agriculture. Sources of soil and water salinization. Salt-loving plants (halophytes), Salt-tolerant plants. Cultivation of feeder and oil crops under saline agriculture systems. Mineral fertilization in saline agriculture systems. Saline agriculture in Egypt.

14411-Water Quality for Agriculture

Agricultural water resources. Chemical and physical characteristics of irrigation water. Dissolved and suspended elements of water. Standards defining suitability of irrigation water. Water salinity problems and their management. Toxicity problems of some dissolved components and methods to overcome them. Seepage problems related to irrigation water. Effect of irrigation water quality on soil, plant and hydroponics. Properties of drinking water for livestock. Standards of drinking water quality for farm animals. Approaches to overcome drinking water problems for farm animals.

14412-Crop Irrigation and Fertilization

Basics of crop irrigation. Crop water requirements. Models for irrigation scheduling for different crops. Mineral and organic fertilization of crops. Models for fertilization

methods and forms of fertilizers for various crops. Fertilization with irrigation (fertigation). Techniques for boosting the efficiencies of irrigation and fertilization.

14413-Environmental Impact Assessment of Agricultural Projects

Basics and methods of assessing environmental impacts of projects. Types of agricultural projects and their effects on surrounding environments. Agricultural projects that use intensively mineral and organic fertilizers and agricultural chemicals and their effects on quality of agricultural products and quality of both surface water and groundwater and gas emissions. Assessing environmental effects of animal production projects, poultry projects, agricultural processing, and projects of organic fertilizers and compost production.

(15) Food Technology Department

15201-Principals of Biochemistry

The importance of biochemistry in different sectors-chemistry of main and secondary biological components (carbohydrates-proteins-lipids-nucleic acids-vitamins-hormones-enzymes – biological energy-metabolism (demolition and construction)

15202-Principals of Food Processing and Preservation

Introduction to food processing, sensory and physical properties of food poisoning and food borne diseases-Microbial spoilage of food-Factors affecting the microbial activity-Steps to processing food for preservation, basic principles for food preservation by chilling, freezing and drying, using heat, preservatives, salting, cracking and radiation-Products Plant and animal.

15301-Chilling, Freezing and Drying of Food Technology

Scientific basic for preservation using chilling, freezing and drying food preservation-chilling, freezing and drying systems and their effect on quality and nutritional value of food, pre-processed frozen food.

15302-Meat, Fish and their Products Technology

Histological structure of fish and meat muscles-Determinants of quality in fresh meat and fish-processing of meat and fish products and its quality evaluation.

15303-Animal, Fishery and poultry food Technology

Classification, identification and biochemical structure of meat, fish and poultry muscles-nutritional value of meat from animal, poultry and fish-processing and preservation of meat, poultry and fish products-product evaluation-utilization of animal food processing wastes.

15304-Cereals and its Products Technology

Histological and chemical composition of cereal-cereal milling technology and rheological properties of food dough-baking products-Molt-Technology of macaroni processing technology-Special cereal products-Rice technology – Starch manufacture technology and high fructose corn syrup – utilization of milling industry wastes.

15305-Functional foods

Definition of functional foods, active components presence in functional foods, examples of functional foods-challenges which face the development, marketing and modification of laws related to functional foods.

15306-Food Chemistry

Chemistry of food components (water-carbohydrates-lipids-proteins-enzymes-minerals-vitamins-natural anti-nutrients factors-food contaminants-natural antioxidants).

15307-Food Analysis

Sampling, storing and preparation methods processing for analysis-Chemical methods and instruments used in food analysis.

15308-Biochemistry (applied)

Safety in biochemistry laboratories-buffer solutions qualitative (tests of Carbohydrate-Proteins-Lipids-Enzymes-Nuclear acids – Vitamins).

15309-Nucleic Acids Chemistry

Synthesis, properties and separation of nucleic acids, nucleic acids, nucleotides and nitrogen bases metabolism-genetic code-chromosomes-ligases and lysis enzyme-methods of isolation and determination of nucleic acids

15310-Proteins, Carbohydrates and Lipids Biochemistry

General structure and characteristics of carbohydrates, proteins and lipids-carbohydrates and proteins metabolism – specific reactions of carbohydrates, proteins and lipids.

15311-Physical and Sensory Characteristics of Food

Physical and Sensory characteristics of food and its relation with the physiological and physiological aspects of humans-Physical characteristics and chemical composition of food-Methods of the sensory properties of food determination-Rheological characteristics of food.

15312-Biotechnology and its Applications in Food Sector

Principles of genetic modification and its aims in plant, animal food and microorganisms compared with traditional food-applications of biotechnology – Ethics related to applications of biotechnology in food.

15313-Food Safety

Sources of natural (physical), chemical and biological hazards in food and environment-food additives related to food safety.

15314-Food Preservation Technology

Food and nutrition – Hygienic handling of food, Food additives, Food borne disease transmission-Changes in food, packaging, food, storing food preservation using canning, freezing, drying, smoking, salting, pickling and irradiation.

15315-Handling and Storing of Foods

Handling, transportation and storing systems, types of stores and methods of evaluation, handling and storing of fresh and dried food and its products, using irradiation and preservatives to elongation of stored food quality and determination its shelf life.

15316-Enzymes

Classification of Enzymes, Enzymes' kinetics, Activators, Inhibitors, the roles of enzymes in the plants

15401-Human Nutrition

The nutritional status in the world-Digestion and absorption of food components-Energy and human requirements – method of energy determination (measurements)-human requirements from food elements – Effect preparation and cooking on the nutritional value of food – preparation of food diets (mixtures)- Nutritional of balance-Nutritional groups-sensitive peoples nutrition.

15402-Food Microbiology

Important microbiology in foods, classification of bacteria, fungi and yeasts related to food and human health-Factors affect the growth of microorganism sources of contamination by microorganism. Methods of microorganism destruction-microorganisms causing diseases, food poisoning and food infections.

15403-Food Quality Control

Definition of food quality, quality measures system of control systems and programs – inspection the quality of food-Statistical methods in food quality control-ISO systems, risk analysis and control of critical points HACCP

15405-Sugar and Sugar Products Technology

Preparation, extraction and clarification of sugar juices –steps of Concentration, clarification and production of raw and clarified sugar-Sugar quality-Sugar replacer manufacture substitutes-sweets and chocolate.

15406-Processing of Vegetable and Fruit Products

The nutritional value and technological characteristic of vegetable and fruits-Deterioration and spoilage parameters of fruits and vegetables-eatables during transportation, storing and its effect on the quality-preparation and processing of fruits and vegetables for preservation-juice and drinks industry technology-concentrates-fruit pulp-scarified fruits – jam–Jelly-marmalade, tomato products, pickles, processing manufacturing a new products.

15407-Preservation of Food by Heat and Untraditional Methods

principles of heat preservation-Steps of pasteurized and sterilized food manufacture – Heat process calculation methods-Different systems of heat process-Preservation of foods using irradiation, high pressure, Ohmic heating, microwave-Electric fields.

15408-Oils and Fats and its Products Technology

Different sources of oils and fats-Physical and chemical characteristic of oils and fats Preparation, extraction, clarification, mixing and esterification of oils and fats-Oils and fats products-Oils and fats reactions

15409-Legumes and its Products Technology

Nutritional value of legumes-Physical and chemical characteristic – Antioxidants factors-The Pre-treatments manufacture and its effects on the quality-Production of different products from soybean and other legumes and quality evaluation.

15410-Industrial Fermentation

Principles and factors related to industrial fermentation-Applications of industrial fermentation in the production of some biological components.

15411-Food Industry Technology

Sugar, sweets and chocolate, oils and fats technology – manufacture the meat, fish, poultry, eggs and its products-cereals and its products-Handling and processing of vegetables and fruits.

15412-Plant Biochemistry

Photosynthesis in the plant-synthesis and decomposition of biological compounds in the plants-Plant bioactive compounds in the plant and its role in the resistance and immunity.

15497 Recent Developments in Food Science and Technology sector

Lectures, case study and practical studies in different specialty related to the recent methods for processing and preservation of food.

30399-Field Training-Specialized (in the Field of Food Science and Technology)

This course deals with the practical training of students on field operations and the collection of data for a field of study in addition to scientific evidence to institutions, facilities, and farms and educational and research institutions related to the nature of the study.

30400-Design and Planning Graduation Project

Introduction to scientific research-its characteristics, stages of preparation, sources and methods of scientific research. The students are divided into groups of (3-5) individuals and in coordination with the supervisor, a coordinator is chosen for each group. A proposal for the project is prepared (whether solving a problem-implementing a new idea-implementing a small project) Presenting and discussing the project proposal end of the first semester (fall semester).

30401-Graduation Project

Students spend at least one day per week to implement the proposed project within a course (30400). The supervisor supervises the project throughout the semester. Students submit a report on the project at the end of the second semester (spring semester).

30410-English language (Scientific Writing)

Concepts related to the field of study.

33351-Food and Dairy Safety

Food and Dairy Safety over view-Foodborne and Dairy diseases-Foodborne and Dairy Pathogens-Food and Dairy Risk Types (Biological Hazards-Chemical Hazards-Physical Hazards)-Bacterial Viruses and their applications in Food and Dairy Safety-Toxins in Food and Dairy – Allergy causes agents in Food and dairy products-Inhibition of pathogens and toxins during manufacturing processes-Risk management and management systems.

33352-Biotechnology in Food and Dairy

Introduction to Biotechnology and its Development-Basic Principles of Biochemistry and Molecular Biology-Modern Techniques in Biochemistry and Molecular Biology-Metabolic Engineering in Bacteria for Production of Food Ingredients-Techniques for Microbial Production of Food Ingredients-Genetics in Lactic Acid Bacteria starters-Genetic Engineering Applications in Lactic acid bacteria starters-applications of genetic engineering in the baker yeast-production of enzymes and their use in the manufacture of food and dairy-use of biotechnology in the production of food flavors-the technique of biotechnology to improve the quality and nutritional value and extended shelf periods in fruit and vegetables-biotechnology and food processing and dairy factories wastes.

33353-Sensory and Physical Properties of Food and Dairy Products

Sensory properties of food and dairy (appearance, color, taste – odor – texture) and its relationship with the physiological and physiological aspects of humans-sensory methods and their applications in the evaluation assessment of food and dairy-physical properties and chemical composition of food and dairy-engineering, photovoltaic and rheological characteristics of food and dairy.

33451-Food and Dairy Quality Control

Quality (role and function) – relationship between quality and production of food and dairy quality systems in food and dairy products (quality control systems, quality assurance systems, quality management systems, quality assurance systems, total quality management systems), ISO quality standards-Good Manufacturing practices GMP-Hazard Analysis and Critical Control Points (HAACP)-Inspection of food shipments-Statistical methods in quality control.

33452-Sanitation in Food and Dairy Plants.

Cleaning and detergents-disinfection and disinfectants-microorganisms and sanitation programs-allergens-rodents-food contamination sources. Design and establishment of food and dairy plants (conditions to be observed or considered in the place-engineering design-air-water – tools – waste disposing and treatment)-Inspection of food facilities factories.

33453-Standards, Laws and Regulations for Food and Dairy.

Standards, laws and legislations (local and international) in food and milk-The role of laws and legislations in the protection of product and consumer-Bodies associated with standardization systems-Commercial law and its relation to the various controls of import and export.

33454-Trading, Storage and Marketing of food and Dairy Products

Food and dairy trading or handling systems-Storage functions in food and dairy-Warehouse types-Storage systems (fixed, random and flexible)-Store cycle-Storage systems and records-Marketing concept-Marketing strategies-Marketing research-Life cycle of goods.

33455-Technology of Secondary Products and Residues in Food and Dairy

Waste processing techniques-Recycling process engineering and economics-Biochemical and nutritional aspects of secondary products in food and dairy products-Microbiology of secondary products-Enzyme techniques for biotransformation of secondary products in food and dairy products-Methods of analysis used to control biotechnology techniques. Secondary products in food, dairy and biofuel manufacturing. Cheese whey and its uses as a by-product in dairy plants-by-products in the sugar, oil extraction, vegetables, fruits, meat, poultry and fish industry.

33456-Food and Dairy Additives

Additives (stabilizers, emulsifiers, natural and industrial colorants and their substitutes, preservatives, food and milk substitutes, enzymes, antioxidants, fat substitutes, acid fading agents, pH controls, special food additives, flavoring agents). Nutritional additives – evaluation of handling of food and dairy additives. Benefits and risks of food and dairy additives and their relationship to diseases-the role of food and dairy additives in the behavior, activity, learning and problems of sleeping in children, the laws regulating food additives around the world.

33457-Packing and Packaging of Food and Dairy Products

Characteristic, functions and specification of food package – types of package (glass – metals – flexible – paper) – multilayers package – biological and degradable package – edible package-Packaging-Modified packaging-Smart packaging-Active packing-Food and packaging interactions-Packaging-Packaging-Food labels, packaging's, materials used for the manufacture and improvement of packaging properties (printing inks, adhesives, stabilizers), natural and microbiological tests for packaging, reuse and recycling of containers.

(16)Pomology Department

16201 Principles of Fruit Crops Production

Introduction to fruit science – Morphology and physiology of fruit crops-Environmental factors and their impact on the growth and production of fruit crops – Flowering and fruiting in fruit crops-Propagation of fruit crops -Genetic improvement of fruit crops-Fruit orchards design and establishment-Irrigation and fertilization of fruit crops-Tree pruning and training-Fruit Thinning-Integrated pest management-Harvesting, handling, and fruit marketing.

16300 Propagation of Fruit Crops

Physiological basis of propagation-Sexual propagation – vegetative propagation-Micropropagation (tissues culture)- Rootstocks –Nursery and nursery management.

16301 Physiology of Fruit Crops

Introduction – factors affecting nutrient elements absorption from the soil, nutritional balance, necrosis and nutrient deficiency symptoms- scientific bases for fertilization, methods of fertilization and different mechanisms for water and nutrient absorption – Photosynthesis, transpiration, and factors affecting and how to control – environmental factors affecting fruit trees growth- juvenile, maturity and flowering stages, fruit set and development and factors affecting them-bud dormancy and different methods to break dormancy- introduction to types and function of plant growth regulators in controlling growth, flowering and fruit set of fruit crop trees .

16302 Agricultural Practices in the Production of Fruit Crops

Introduction- Nurseries and orchards management- Studying species and varieties of fruit crops and its statics in Egypt- scientific bases for principle of yield potential-The principle of expected efficiency of using solar energy for mass production of fruit crops and its relation to pruning and training – principles of water relation relating to irrigation and fertilization – fruit crops propagation – harvesting and packaging of fruit crops – post harvest treatments, storage and handling of fruit crops.

16303 Precision Agriculture in Fruit Crop

Introduction to precision agriculture and its importance in developing the production and exportation of horticulture crops – Tools used in precision agriculture and the steps to implement- Global Positioning Systems Fundamentals -Basics of geographical information-Basics of remote sensing-Basic principles of maps-The statistical principles used (Data structure and its types – Data analysis methods) – Techniques of results interpretation – the 12 interpretation maps-Research and applied studies in solving problems and improving production and quality. Genes-The genetic code of the genome of fruit crops, comparisons, and developmental changes in the genetic code-Gene expression analysis at the genome level.

16304 Climate and Environmental Changes and its Impact on Fruit Crops

Heat stress-Salinity stress-Water stress-Nutrient's stress-General mechanics of responding to stress-Stress respond patterns-Resistance strategies-Localization stages and adaptation stages-Effects on productivity and classification of fruit crops.

16401 Postharvest Physiology

Defining fruits- Anatomical structure- nutritional fruit value and its role in human health- Growth stages, fruit development, quality factors and food safety- respiration process: measuring, frequencies, importance, and factors affecting it – the role of plant growth regulators specially ethylene role in maturity and senescence – Ethylene biosynthesis -Biological aspects of degradation-Morphological growth – microbial structure and growth – water loss, physiological damages, and microbes

16402Growth Regulators and Their Applications in Fruit Crops

Hormonal system in plants – plant hormones interactions – physiological and growth regulators balance – the relation between hormonal balance and physiological processes – effect of plant growth regulators on postharvest and fruit storage physiology – techniques and practical applications using plant growth regulators in fruit crops orchards.

16403 Cultivation and Production of Citrus

Growing regions, nutritive value, health and economics – Taxonomy – Growth habit and environmental conditions- flowering and fruit set– propagation and rootstocks – planning and establishing orchards – Orchard management (irrigation- fertilization- pruning- thinning) – breeding and genetic improvement – varieties-Harvesting, packing, handling and fruit – disease, pests and controlling methods.

16404 Water and Fertilizers Requirements of Fruit Crops

Definition of water requirements – The factors affecting it – Determination the water requirements for a given crop-Calculation of irrigation needs of the crop – Definition of fertilization requirement – Macro and micro nutritive elements and symptoms of execs or deficiency – Nutrients crucial levels in soil and plant tissues-Factors influencing fertilization requirements – Calculation of fertilization requirement for a given crop-The scientific principles of fertigation.

16405 Organic and Sustainable Production of Fruit Crops

Definition and importance of organic agriculture-Organic laws, registration, and accreditation-Soil management and preparing of the seed bed or seedling for cultivation-Propagation by seeds or seedling and transplanting-Mixtures of planting media – fertilizers, soil enhancements, coverage crops and compost production – cultivation – irrigation and fertilizers – Weed control: strategies, technique and non-chemical controlling ways – insects and diseases: pests follow up, methods to control including biological methods- Harvesting, postharvest handlings, storing and transporting-Marketing: strategies, whole sale market, retail market, direct marketing methods-Planning and management: integration of all factors.

16406 Postharvest Technology

Causes of postharvest losses-Harvesting indices- Harvesting systems -Standard quality specifications-Cooling techniques and cold storage – Preparation and handling of crop for fresh consumption – Fresh-cut products – Drying treatments-Refrigerated shipping.

16407 Intercropping in Fruit Crops

Definition of intercropping and its main objective?- Types of intercropping (mixes, Row, Patch, strip and relay intercropping)- Its economic advantages and disadvantages for intercropping applications – Main aspects to be considered in the application of intercropping – relation between plant growth factors (light, water, nutrients) and the achievement of successful intercropping fruit crops- recommended crops for intercropping with some essential fruit crops and its cultivation methods-Orchard establishing and tree planting in intercropping systems- agricultural practices (irrigation, fertilization, pests and disease control) in intercropping systems- Economic study of intercropping in some fruit crops such as mangos, lemon, guava, and dates.

16408 Cultivation and Production of Grape

Environmental conditions and its impact of grapevine cultivation-Morphological description of grapevines – Varieties and propagation-Orchard establishment- Vines framework formation-Pruning systems -Irrigation and fertilization-Fruit growth and maturity- Harvesting, packaging, and storage-Integrated pest management.

16409 Breeding and Improving Fruit Crops

Natural sciences that encourage in breeding development- embryo production asexual methods and polyploidy-sterility and sexual incompatibility – discovering new genes with economic importance using modern techniques-Breeding methods to produce high quality varieties – Importing, Hybridization-Mutations- Genetic engineering and its importance in improving fruits – Methods of gene transfer for improving fruit seedling production- Using new implements in studying fruit tree genome

16410Biochemistry and Molecular Biology in Fruits

Photosynthesis and respiration reactions-Metabolic reactions, genomic science, Proteome and Meatpole – Studying the nitrogen element – amino acids biosynthesis and studying it using GC_MS technique – Terpenoids metabolic reactions – Phenyl metabolic reactions- Fat metabolism in cuticle layer-Sugars metabolism in the cellular wall.

(17) Pesticide Chemistry & Technology Department

17101-Principles of Physical Chemistry

The structure of atoms, the chemical bond, the spectrum of atom and the distribution of electrons in atom. Quantum theory (quantum mechanics), distribution of electrons in orbitals, the electronic theory of valency (valency co-ordinate valency, resonance hybridization of bond orbitals), The state of matter, measurements of unites, the gases, gas laws, kinetic theory of gases, behavior of gases, van der Walles Equation, The liquids (properties of liquids). The solutions, solution properties, concentration units. Colloids and their properties, Thermochemistry, laws of thermochemistry, heat of reaction measurements, Thermochemical equation.

17102-Principles of Organic Chemistry

Structure of organic molecules and mechanism of organic reactions. Nomenclature of organic compounds, physical and chemical properties of organic compounds .Methods of synthesis of aliphatic compounds (alkanes, alkenes, alkynes, alkyl halides, aliphatic alcohols, ethers, aldehydes, ketones, carboxylic acids and their derivatives, nitrogen compounds), and aromatic compounds (aromatic nitro compounds, aromatic amines, diazonium salts, phenols, aromatic corboxylic acids, aldehydes, ketones, aromatic sulphonic acids, dyes and petrochemicals).

17103-Principles of Analytical Chemistry

Different methods of quantitative analysis, ionic activity, chemical equilibrium. Equilibrium constants in acidic and alkaline reactions and the solubility product in precipitation reactions. Reactions of quantitative volumetric analysis, measurement of pH and buffer solutions. Precipitation and oxidation-reduction reactions, various titrations, indicators used, and indicator curves in neutralization. Precipitation, and oxidation-reduction reactions. Introduction to methods of electrochemical analysis and the electrode and its relationship to chemical analysis. Introduction to spectrograms. Description of absorption processes and applications of Lambert-Beer law. Introduction to methods of separation and chromatography. Chromatography and mechanics of separation.

17104-Principles of Organic and Physical Chemistry

Structure of the atom. Chemical bonds and distribution of electrons. units of measurement. States of matter. Laws of thermodynamics. Mechanism of reaction. Methods of organic compounds preparation.

17301-Pesticides Analysis

Physical properties for formulated pesticides, Chemical properties of formulated pesticides, Sampling, extraction and determination of formulated pesticides, Sampling of environmental samples containing pesticide residues. Extraction and clean-up of these samples, Biological methods for determination of pesticide residues including bioassay and enzymatic methods, Chemical determination of pesticide residues including photometric and chromatographic methods.

17302-Chemistry of Insecticides

Chemistry of inorganic insecticide. The mineral oils as insecticides specification chemistry and function of surface-active agents. Chemistry of botanical insecticides. Chemistry of synthetic organic insecticides: chlorinated hydrocarbons, organophosphorous compounds, carbonate compounds (the acaricids effects of the three group) synthetic pyrethroids. Chemistry of other groups of insecticides (pheromone, chemosterilants attractants, repellents). Simple comparison between biological and chemical methods.

17303-Chemistry of Fungicides

Introduction to fungal pathogens of plant diseases. Study of the chemical and physical properties of fungicides and their efficiency in the control and management. Classification of fungicides: organic, in-organic, and bio-pesticides). Toxicological studies on different microbial pesticides and bactericides. Study of the phenomenon of resistance to the causes of plant diseases to protect them. Recent trends in the control of plant diseases and alternatives to traditional pesticides such as compounds or natural extracts.

17313-Chemistry of Nematicides

Introduction, identification, classification and nematode classes. Pathogen nematodes infect plants (foliar or roots). Nematode control: direct and indirect methods. Nematicides behavior in the application media.

17305-Bioassay of Pesticides

Introduction, aims, bioassay and pesticide residues. Bioassay and susceptibility of insect stains to insecticides. Bioassay and screening tests. Different methods of bioassay. Standardization of bioassay tests. Factors affecting the insects. Factors affecting the pesticides. Bioassay of fungicides and herbicides. Statistical methods of bioassay data.

17306-General Pesticides

Introduction: history of pesticide application in Egypt. Economic importance of pesticide application. Formulation of pesticides and methods of application the mineral oils as pesticides, the botanical pesticides. The synthetic insecticides (chlorinated hydrocarbons, organophosphorous, pyrethroids and other compounds) fungicides. Herbicides other types of pesticides resistance. Integrated pest management the compatibility of pesticides. Alternative methods to pesticide using programs of pest control.

17308-Chemistry of Acaricides

Introduction. Classification, methods of control: direct and indirect methods. Acaricides behavior in the application media. New trends in Acaricides.

17309-Control of Pest Stored Products

Factors affecting grain storage and stored products. Insects and non-insects invade stored products. Prevention methods for controlling pest stored products. Curative methods for controlling pest stored products. Integrated pest management.

17310-Advanced Organic Chemistry

Aromaticity in organic compounds and some biological molecules. Substitution reactions and their general mechanism. effect of substituents on the orientation reactivity of the aromatic ring. Theory of substitution including orientation and reactivity based on charge distribution and transition state stability. General applications for some organic compound's preparations. Physical and chemical properties of organic compounds in addition to preparation techniques of nitro, amino, phenolic, aldehydes, ketones, carboxylic acids as well as heterocyclic aromatic compounds including properties, reactions and nomenclature of there hetercyclic aromatic compounds.

١٧٤٠١-Toxicology

Introduction to toxicology. Definition and evaluation of toxicity. Route of insecticide exposure, absorption and distribution. Mode of action of insecticides, inorganic and botanical insecticides. The nervous system, vertebrates vs. invertebrates, comparative physiology and pharmacology. Mode of action of organophosphorous and carbamates insecticides. Metabolism and pharmacokinetics of insecticides. Toxic responses of different organs to insecticides.

١٧٤٠٢-Chemistry of Herbicides

Nature of weeds as a dangerous pest for agricultural production. Methods of weed control. Selectivity of herbicides. Classification of herbicides according to the method of application or the mode of action. Identification of herbicides for its application. Formulation, physical and chemical properties. Mode of action. Behavior of pesticides in soil and inside the plant. Metabolism of herbicide in higher plants. The relationship between herbicides chemical structure and their biological activities in plant cells.

17403-Pesticide Formulation

Introduction. Basis of Pesticide selection and application. Types of formulae. Scientific basis in physical chemistry for pesticides. Formulation with the relation of the chemistry and properties of colloidal systems, suspensions, emulsions and gases formula-pesticides. Formulation in the view of global standards criteria.

17404-Chemistry of Natural Products

Introduction. Detection of natural products, extraction, purification. Instruments. Chemistry of volatile oils, trepans, flavonoides, phenols, Glucosides.

17406-Applied Organic Chemistry

Aromaticity in organic compounds and some biological molecules. Substitution reactions and their general mechanism. Effect of substituents on the orientation reactivity of the aromatic ring. Theory of substitution including orientation and reactivity based on charge distribution and transition state stability. General applications for some organic compound's preparations. Physical and chemical properties of organic compounds in addition to preparation techniques of nitro, amino, phenolic, aldehydes, ketones, carboxylic acids as well as heterocyclic aromatic compounds including properties, reactions and nomenclature of there hetercyclic aromatic compounds.

17407-Applied Physical Chemistry

Mathematics for physical chemistry-gas laws. Kinetic theory of gases. First and second laws of thermodynamics and their chemical applications. Chemical laws of reaction rates and kinetics.

17408-Properties of Organic Reactions

Chemical structure of organic compounds. Optical isomerism. Mechanism of oxidation and reduction. Stereochemistry. Rearrangement of molecules. Factors affecting chemical reactions rates.

17409-Principles of Chemical Reactions Measurement

Rates or reactions. Order of the reactions. Molecularity of the reactions. Half-life time. Thermodynamic laws. Chemical equilibrium. Electric cells and electric analysis.

17410-Advanced Analytical Chemistry

Calculations of titrimetric analysis and complexiметric titrations. Buffer solutions, Colourmetric Methods, Spectroscopy, Infera Red, Potentiometric measurements, Electrogravimetry, Chromatography.

17411-Advanced Quantitative Analytical Chemistry

Methods of separation. Theories of Chromatography and their types: TLC, HPLC, GC. Method of Analysis

17415-Pesticides and Pest Plant Control

Physicochemical properties of fungicides and bactericides and their categories. Toxic effects of fungicides and bactericides, weeds. Application of herbicides and their behavior. Classification of herbicides.

(18) Rural Development Department

18101- Principles of Rural Sociology

concepts, objectives, theory and methods of rural sociology. The relation of rural sociology to sociology and other social sciences. Rurality and urbanity. Characteristics of rural life and rural population. Rural institutions and organizations.

18301-Rural Social Institutions

Definition, characteristics and functions of rural social institutions. Relationships among rural social institutions. Relationship of institutions with organizations. Change of rural social institutions.

18302-Contemporary Social Theories

Concept and functions of social theories. Evolution of social theory in the twentieth century. Contributions of the pioneers of social theories

18303-Methods of Social Research.

Characteristics of scientific method. Types of social research. The stages of the social research process include selection and definition of the study problem, review of literature, clarifying the concepts, stating the hypotheses, type of methods and tools, determining spatial, human and temporal areas of the study, data processing and analysis, interpretation of the results, and writing final report

18304-Demographic Analysis of the Rural Society

Definition and areas of social Demography. Determinants of the rural population growth, births, deaths and migration. Composition of rural population. Geographical distribution of rural population. Relationship of demographic variables with socio-cultural, economic and environmental variables. Rural population problems and policies.

18305-Preparation of Rural Leaders and Administrators

Concept and theories of leadership and management. Types of leadership. Leadership characteristics. Methods of Leader' findings. Role of local leaders and administrators in rural community development. Development of leadership and administration skills in rural community.

18306-Development of Rural Communities in the Old and New reclaimed Areas.

Definitions of development process and related concepts. Theories of community development. Stages of the process of rural community development in the old land and newly reclaimed areas.

18307-Transfer and Diffusion of innovations

concepts of transfer and diffusion of innovation. Process of diffusion of innovation. Influential factors in the adoption of innovations. Obstacles to the adoption of innovations

18308- Rural Social Stratification

Concept and functions of social stratification. Class systems around the world. Methods of identifying and measurement of social classes. Social classes in the rural and urban areas. Relationship of Social stratification with social change.

18309-Rural Socio-economic Sociology

History of economic sociology. Comparison between concept of rural economic sociology and each of social economics and Political economics. Social identity of agricultural economics on the light of the economic sociology. Social aspects of some national developmental projects.

18310-Rural Investment Incentives and Small Enterprise.

Investment spirit in the social and economic theory. Concept of the private investor and types of investors. Personal, organizational and institutional motives to promote and in courage investment initiatives. Local and foreign investment of small and medium enterprises in the shadow of globalization. National map of small enterprises stages and evaluation of small enterprises and its role in the rural development.

18398-Selected topics in Rural Development

18401-Analysis of Social and Environmental Rural Problems

Concepts of social and environmental problems. Approaches of studying social and environmental problems. Causes and effects of social and environmental problems. Social and environmental problems and social policies.

18402-Planning and Evaluation of Rural Development programs

Concept, types, methods and stages of planning. How to plan for rural programs and projects. Definition, types, methods of evaluation. How to assess the achievement of the objectives of local development plan.

18403-Social Statistics and Its Applications.

Principles of descriptive and inference statistics. Probability and samples. Testing statistical hypotheses. Measurement of statistical significance used in analyzing data from different samples according to research variables.

18404-Social Psychology

Principles of social Psychology. Relationship of Social Psychology, with both Psychology and Sociology. Fields and theories of Social Psychology. Using social psychological theories in understanding and analysis of social phenomena especially in rural areas.

18405-Rural Social Policy

Definition of social policy and its relationship with social problems, legislations and rural development. Factors affecting rural social policies.

18406- Rural Social Organizations

Concept, structure, functions and types of rural organizations. Effectiveness and efficiency of rural organizations. Integration and coordination among rural organizations. Role of rural organizations in the rural development.

18407-Governance and Rural Development.

Concept of governance. Dimensions and elements of governance. Role of governance in rural development. Local administration and local governing. Decentralization and its political, financial and economic dimensions and its role in the promotion of Rural development. Gradual planning for application and evaluation of decentralization.

18408-Dynamics of Social Change

Concept causes and types of social change. Theories and methods of studying social change. Relationship of social change with cultural and economic change and rural development.

18409-Rural Family

Concept, functions, types of family and marriage. Characteristics of rural family. Change of rural family problems of rural family. Roles and Status of rural woman.

18410-Rural Culture and Social Structure

Concept of culture. Rural culture and components. Concept of social structure and components. Relationship of rural culture with rural social structure. Relations of rural culture and social culture to rural change.

18411-Comparative Rural Societies

Analysis of rural social systems around the world. Its origin, evolution, structure, functions and change.

18412-Obstacles of Sustainable Rural Development

Concept and elements of sustainable rural development. Obstacles and problems hindering process of rural sustainable development at both national and local levels. Reasons and impact of the obstacles and ways of confronting it.

18413-History of Social Thought

Theoretical contributions of social theorists from ancient civilizations to the age of parents of sociology (Ibn Khaldun, Kont, Spencer, Durkheim and Weber).

18414-Research in Rural Development

Student carries out a research in one topics of rural development under supervision of a staff member, through which rules of scientific method are applied utilizing what have been learned in courses of social methodology, statistics and social theories.

(19) Crop Science Department

19211-Principles of Field Crop Production

Studying the principles of production and distribution of the field crops in Egypt and the world, and the environmental factors affecting field crops production, studying the seedbed preparation processes and methods of cultivation and plant care for the field crops, methods of cultivations, crop maintenance after sawing, fertilizations and fertilizers, weeds biology and controlling methods, harvesting and storage methods, seed quality, organic farming, farming systems, and crop rotations.

19311-Production of Field Crops in Egypt

Studying the different methods of planting, serving, and harvesting of field crops and the post-harvest operations for the basic field crops planted in different soil types in Egypt and identifying the favorable environmental conditions for their production. Studying the botanical structure of the important field crops and how to identify them. The identification of the plants and seeds of the weeds that grow with the field crops and preparing an herbarium for the weed plants in north delta region. Frequent visits to the experimental farm.

19315-Statistics and Experimental Designs:

Defining statistics and its importance in the scientific research, sampling methods, descriptive statistical measurements, theory of probability, important theoretical distributions (normal, t, and f), test of significance using t-test, f-test, Qui-square, principles of experimental design, statistical analysis for completely randomized experiments, randomized complete block designs, regression, and simple correlation.

19316-Plant Breeding:

Genetic and cytological principles and their relationship to plant breeding. Breeding methods for self- and cross-pollinated crops to improve the economical crops, to produce new cultivars that are superior in yield quantity and quality and tolerance to environmental and biological stresses. Application of biotechnology tools for crop improvement. Training on the different plant breeding methods, self- and cross-pollination methods for field crops, measurements of yield and quality for some field crops.

19317-Biotechnology and Its Applications in Field Crops Improvement:

Uses of tissue culture. Culture of embryos, ovules, anthers, and pollen grains. Protoplast culture and the production of somatic hybrids, molecular genetics and its applications in the field crops improvement, practical applications for the topics discussed in the theoretical lectures.

19318-Plantation of Deserts and Dry Lands:

A detailed study of the types of deserts, their climatic conditions, and the suitable crops to be planted in the desert lands and are characterized by their high drought tolerance. Dry land, rain-fed, and rangeland farming. Seedbed preparation procedures and

studying the different sowing and post sowing methods in desert and newly reclaimed lands. Fertilizers and fertilization methods in new lands, organic farming, agricultural systems, and crop rotations in desert lands.

19321-Seed Production and Quality:

Defining seeds and their importance, seed investigation and sampling techniques, seed quality testing (purity, germination, vigor, moisture content, infestations, genetic purity). Seed quality control regulations. Factors affecting seed vigor, seed storage and studying seed physiology. How to avoid seed contamination, and seed quality measurements.

19322-Production of Cereal and Legume Crops:

A detailed study of the production methods of the important cereal and legume crops in Egypt. Presentations and discussions about some topics related to increasing the productivity of those crops. Studying the effect of biotic and abiotic stress conditions on their productivity.

19325-Management of Natural and Desert Rangelands:

Types of natural rangelands, proper range management, range status and improvement methods, utilization of desert rangelands.

19326-Animal and Poultry Forage Crops:

Chemical composition of forage crops and its relation to nutritional value, palatability, and consumption rate and their relation to feed characters and animal species. Growing of forage crops for hay and silage production, conditions for storage and preservation of forage cops. Use of forages in mixtures to cover the growth requirements of and productivity of animals and poultry. Feed quality from the nutrition and health perspectives.

19412-Field Crops Physiology:

Effect of different environmental factors on field crops growth, quantitative analysis for the growth of the important field crops, like; wheat, rice, maize, cotton and some sugar and forage crops grown under competitive conditions.

19413-Field Crop Taxonomy:

Studying the morphology and structure of the important field crops, taxonomy of the different species and cultivars of those field crops. Identification methods for the field crops in the different growth stages. Training on the different ways to identify the plants and seeds. Reports on the related topics.

19415-Weed Biology and Control:

Effect of environmental factors and cultural practices on weed spread and reproduction. Principles of weed integrated management. Identifying the plants and seeds of the common weed species in the north delta region using the botanical keys and identifying the different weed growth stages. Preparing a herbarium for the most common weed plants and seeds.

19416-Field Crops Ecology:

Different theories of crop distribution in the world. Theories of origin of the different species and genetic structures. Natural selection. Theories of the ecotypes. Climate classification. External ecological factors, environmental pollution and tolerance and adaptation to the environmental stresses. Field visits to the metrological stations and areas inhabited with wild plant species in the delta and north coast. Presentations and discussions on related topics.

19417-Technology and Quality of Food Cereals and Legumes:

Studying the different factors affecting quality and value of cereal crops and their suitability for the different uses. Physical and chemical quality analysis. Wheat milling industry. Rice milling industry. Backing techniques. Effect of storage conditions on grain quality. Legume crops quality measurements. Practical training on quality tests of cereal and legume crops.

19418-Production of Unconventional Crops:

Methods of production and evaluation of the unconventional crops (medicinal crops, crops with specific use, variable crops). Important factors affecting the production and quality of those crops. Future of the unconventional crops in the Egyptian agriculture. Economic value of those crops. Physical and chemical properties of the products of those crops. Studying their botanical structure. Identifying the active ingredients in the crops and their determination methods.

19419-Production and Quality of Forage and Pasture Crops:

Production of grass and legume forage crops, and other plants suitable for animal nutrition either as green forages or preserved feed or pastures. Natural pastures. Methods of preservation of green forages. Quality of forage crops and methods of measurement.

19420-Fiber Crops Production and Technology:

Production of fiber crops especially cotton. Physical and chemical properties of natural and synthetic fibers. Quality measurements of natural fibers. Identification of natural fibers. Equipment's of measuring fiber quality. Cotton ginning. Visits to cotton fiber quality laboratories.

19421-Production and quality of industrial food crops:

A detailed study of the production of the main sugar and oil crops. Studying their quality characteristics and the effect of the cultural practices on them. Laboratory determination to the most important sugar and oil quality measures. Discussions on some topics related to increasing the productivity of those crops and the effect of the various stress conditions on the productivity.

19422-Topics in Breeding of the Important Field Crops:

Methods of breeding new varieties for the important field crops in Egypt, especially cotton, wheat, maize, rice, and forage crops. Discussions and reports on related topics.

19423-Breeding and Improvement of Cereal and Forage Crops:

A detailed study on breeding and improvement methods of cereal and forage crops. Methods of production of new varieties, that are superior in their productivity and

quality and tolerant to the biotic and abiotic stress conditions. Production methods of the grass and legume forages and other plants suitable for domestic animal nutrition in the form of green or preserved forages or pastures.

19424-Breeding and Improvement of Cereal and Forage Crops for Arid and Desert Areas:

A detailed study on breeding and improvement methods of cereal and forage crops in the desert areas. Methods of production of new varieties, that are superior in their productivity and quality and tolerant to the biotic and abiotic stress conditions.

19425-Range Management in Dry and Desert Areas:

Types of rangelands, Egyptian rangelands, management of ranges in dry and desert areas range utilization and conservation, range improvement. Practical applications on the previous topics. Field visits to the rangelands.

19426-Physiology of the Environmental Stresses:

Types of environmental stresses, their methods of measurement and their effect on the physiology and production of the important field crops. Tolerance mechanisms of the different crop species to the different kinds of stresses. Practical applications on related topics.

19427-Weed Biology and Control in the Pastures and Desert Areas:

Effect of environmental conditions and cultural practices on weed growth, spread and propagation. Basis of integrated weed management. Identification of the plants and seeds of the common weeds in pastures and desert areas using the botanical keys and identifying their different growth stages. Preparing a herbarium for the most common weed plants and seeds.

General Courses University, Faculty or Program Requirements

30100-Human Rights

Defining human rights in international treaties and conventions- History of the study of human rights (English and French law, the US Constitution and its amendments)- the classification of human rights- human rights in the divine law- The Charter of the United Nations and international and regional organizations- Anti-Corruption, Applications in the field of study.

30110-English Language (General)

30220-Introduction to computer science

30399-Field Training-Specialized (within the specified program)

This course deals with the practical training of students on field operations and the collection of data for a field of study- in addition to scientific trips to institutions-facilities, and farms and educational and research institutions related to the nature of the study.

30400-Design and planning of graduation project

An introduction to scientific research-its characteristics- stages of preparation- sources and methods of scientific research and processes. The students are divided into groups of (3-5) individuals and in coordination with the supervisor, a coordinator is chosen for each group. A proposal for the project is prepared (whether solving a problem-implementing a new idea-implementing a small project) Presenting and discussing the project proposal at the end of the first semester (fall).

30401-Graduation project

Students should be free just and spend at least one day per week to achieve or implement the proposed project included in the course (30400). The supervisor supervises the project throughout the semester. Students submit a report on the project at the end of the second semester (spring semester).

30410-English (scientific writing)

Concepts related to the field of study.

30411-Artistic creativity

The course aims to develop methods of creative thinking in terms of developing ways to develop fluency and individuality of the student through learning the visual arts-aesthetics of the figure- color theories and audio arts in terms of tasting music and raising the level of sense and auditory perception to improve the world's taste for society and raise the efficiency of the self-skills and human capabilities of the graduates to keep up with everything new and modern innovations to meet the needs of the labor market in light of the era of globalization and the skills of the twenty-first century.

30412-Sports culture

This course aims to provide university students with general concepts about the educational importance of sports and physical education. The course also discusses the role of sport in health and physical development of young men and women- leading to the role of sport in developing belonging to the Egyptian society.

The student studies the different types of local- international and Olympic sports competitions and their general rules- the course also deals with the role of sports-economics and sports tourism in the development of society.

30413-Tourism and Society

This course aims to highlight how the tourism activity and the tourism industry in all its sectors are intertwined within the framework of the host society- It deals with some basic concepts such as the definition of tourism from the point of view of sociologists-anthropologists- the study of tourism- as well as social studies of tourism. The course also includes the nature- boundaries and characteristics of social relations and mutual vision between tourists and local residents. This is in addition to the role of tourism in bringing about social and cultural change and the manifestations of this change in the host society- with reference to the most important global experiences in this regard.

This course deals with the relationship of hotels with the environment and their role in preserving it through the so-called green hotels- with a study of the practice of this type of hotels and the challenges they face at the international and local levels- as applied to Egypt. It also deals with the study of ecological hotels and their relationship to the environment and community development.

It also deals with the role of the tour guide by identifying the nature of the integrated tasks that he performs in the field of tourist guidance and their positive effects in gaining the confidence of the visitor- whether from citizens or foreigners- and increasing tourism awareness.

30414-First aid

This course gives a general idea of the basics of first aid- where students are able to acquire the skills required to deal with emergency situations in order to survive and reduce the occurrence of future complications or any of its consequences until the arrival of medical relief.

30415-Critical thinking

This course aims to show the importance of thinking processes and developing their skills: such as analysis, synthesis, deduction, and inference- Cognitive abilities: such as the ability to criticize and scrutinize and the ability to consciously understand. This course includes the following topics: The meaning of critical thinking: language and reform-

Critical thinking in the history of philosophical thought- critical thinking and scientific thinking, the relationship between critical thinking and logic and the ability to infer- the information and communication revolution and its impact on strengthening the effectiveness of critical thinking.

30416-Human and Environment

The course deals with environmental issues, their concept and their relationship to humans and ecosystems- and then discusses environmental pollution (air, water, and soil pollution). The student also studies the types of waste and their impact on the environment.

The course deals with environmental phenomena (global warming and its definition and causes- desertification- erosion of the ozone layer- acid rain- in addition to the economy-environment and environmental legislation).

30417-Reproductive health for both sexes

This course aims to help the student to understand sexual health and reproductive rights and their relationship to the development of the family and society- with a focus on the importance of women's health and their role in society.

The student also studies the methods of family planning, the methods used-and the prevention of diseases transmitted through wrong sexual practices.

31201-Basics of Horticultural Production

The economic value of horticultural crops- environmental factors affecting their growth- agricultural operations- reproduction- the role of hormones- breeding and improvement of horticultural crops- protected and organic agriculture- internal arrangement of flowers and ornamental plants and landscaping.

31401-Biotechnology in the scope of plant production

An introduction of the course, biochemistry of nucleic acids and bioinformatics-Principles and techniques used in the study of genetic expression of genes of economic value-Gene transfer and production of genetically improved plants-Use of biotechnology in production of plants resistant to bio-stress-Use of biotechnology in the production of plants resistant to environmental stress. Moreover, utilization of biotechnology as a tool to produce new plants that can tolerate environmental stresses, also the produce fruits which are better in quality and storage ability.

31402-Applications of nanotechnology in the scope of plant production

An introduction to nanotechnology and its historical overview- nanotechnology applications in various agricultural processes to increase production efficiency- quality-packaging and handling: Fertilizers: advantages of nanomaterials (Nano-sized particles exist in nature and can be created from a variety of products, such as carbon or minerals like silver, but nanomaterials by definition must have at least one dimension that is less than approximately 100 nanometers. Most nanoscale materials are too small to be seen with the naked eye and even with conventional lab microscopes) and their impact on growth and productivity-Some application applications of nanometric images of fertilizers-Improving the efficiency of fertilizer use-Pesticides: Advantages of nanocides and their role in reducing environmental pollution, Some Applications of Nanometric Images of Pesticides-Plant Protection: The role of nanomaterials in the diagnosis of Pathogens and Pests, The Role of Nanomaterials in reducing poisonous residues in pesticides The role of nanomaterials in improving the defense of the plant-applications of nanotechnology in controlled agriculture and its role in improving yield

without damage to soil and water-the role of nanomaterials in seed germination-the use of nanotechnology in post-harvest technology.

31403-Quality certification systems for agricultural crops

The quality concept of horticultural crops-The importance of applying quality certification systems in the development of horticultural crops production in Egypt-Quality standards in the market-Seed quality control programs- Product control programs from agriculture to till fruit harvesting (the important measures for harvest, packing and fruit quality control) Fruit International organizations for providing quality certificates for horticultural products. The importance of applying quality accreditation systems in the development of horticultural production and industry in Egypt-Examples of some quality accreditation systems: Good Agricultural Practices (GAP)-ISO 22000-Hazard Analysis Critical Control Point (HACCP).

32201-Basics of Animal, Fish and Poultry Production

The status of animals in the animal kingdom, cattle- sheep and goat breeds- the foundations of establishing animal production farms- milk stable and machinery- dairy and fattening farms management- calf rearing systems- reproductive care of the herd-factors affecting the productivity of farm animals- types of fish farms- various uses of poultry farm products- types of poultry farms- poultry farm design- types and requirements for poultry houses- environmental factors affecting poultry production-ways of breeding- reproduction and egg production- poultry feeding principles-practical exercises and applications.

32301-Basics of Statistics

Statistics- its functions and practical method- samples and their divisions- display and summarize data- descriptive metrics- normal distribution- variance analysis- statistical hypotheses and morale tests- correlation- common variance analysis- types of animal and poultry experiments and the basics and steps of their design- applications to simple and complete randomized trials- exercises and practical applications.

32401-Biotechnology and its applications in animal and poultry production field

The concept and use of biotechnology- biotechnology and animal breeding programs-the expected improvement in the field of animal production by applying biotechnology in the field of animal and poultry production- Egypt and biotechnology, poultry chromosomes- chicken chromosome map- relational aggregates- genetic engineering applications in poultry- practical exercises and applications.

33202-Agricultural Microbiology

Microbial aggregates- modern methods of identifying microbes- the relationship between microorganisms and plants- decomposition of organic matter and release of nutrients- removing pollution from soil by biological methods.

33203-Principles of Agricultural Biochemistry

Chemistry of the main biological components- carbohydrates- proteins and fats- sections of enzymes- enzymatic reactions-nucleic acids- vitamins and hormones- digestion, building- respiration and photosynthesis in green plants- metabolism processes (demolition and construction)- structure and functions of a plant cell- major and minor components of the plant- tissue culture and control by means of molecular biology.

33351-Food and Dairy Safety

Food and Dairy Safety over view-Foodborne and Dairy Diseases-Foodborne and Dairy Pathogens-Food and Dairy Risk Types (Biological Hazards-Chemical Hazards-Physical Hazards)-Bacterial Viruses and their applications in Food and Dairy Safety-Toxins in Food and Dairy – Allergy causes agents in Food and dairy products-Inhibition of pathogens and toxins during manufacturing processes-Risk management and management systems.

33352-Biotechnology in Food and Dairy

Introduction to Biotechnology and its Development-Basic Principles of Biochemistry and Molecular Biology-Modern Techniques in Biochemistry and Molecular Biology-Metabolic Engineering in Bacteria for Production of Food Ingredients-Techniques for Microbial Production of Food Ingredients-Genetics in Lactic Acid Bacteria starters-Genetic Engineering Applications in Lactic acid bacteria starters-applications of genetic engineering in the baker yeast-production of enzymes and their use in the manufacture of food and dairy-use of biotechnology in the production of food flavors-the technique of biotechnology to improve the quality and nutritional value and extended shelf periods in fruit and vegetables-biotechnology and food processing and dairy factories wastes.

33353-Sensory and physical properties of food and dairy products

Sensory properties of food and dairy (appearance, color, taste – odor – texture) and its relationship with the physiological and physiological aspects of humans-sensory methods and their applications in the evaluation assessment of food and dairy-physical properties and chemical composition of food and dairy-engineering, photovoltaic and rheological characteristics of food and dairy.

33451-Food and Dairy Quality Control

Quality (role and function) – relationship between quality and production of food and dairy quality systems in food and dairy products (quality control systems, quality assurance systems, quality management systems, quality assurance systems, total quality management systems), ISO quality standards-Good Manufacturing practices GMP-Hazard Analysis and Critical Control Points (HAACP)-Inspection of food shipments-Statistical methods in quality control.

33452-Sanitation in food and dairy plants

Cleaning and detergents-disinfection and disinfectants-microorganisms and sanitation programs-allergens-rodents-food contamination sources. Design and establishment of food and dairy plants (conditions to be observed or considered in the place-engineering design-air-water – tools – waste disposing and treatment)-Inspection of food facilities factories.

33453-Standards, laws and regulations for food and dairy

Standards, laws and legislations (local and international) in food and milk-The role of laws and legislations in the protection of product and consumer-Bodies associated with standardization systems-Commercial law and its relation to the various controls of import and export.

33454-Trading, storage and marketing of food and dairy products

Food and dairy trading or handling systems-Storage functions in food and dairy-Warehouse types-Storage systems (fixed, random and flexible)-Store cycle-Storage systems and records-Marketing concept-Marketing strategies-Marketing research-Life cycle of goods.

33455-Technology of Secondary Products and Residues in Food and Dairy

Waste processing techniques-Recycling process engineering and economics-Biochemical and nutritional aspects of secondary products in food and dairy products-Microbiology of secondary products-Enzyme techniques for biotransformation of secondary products in food and dairy products-Methods of analysis used to control biotechnology techniques. Secondary products in food, dairy and biofuel manufacturing. Cheese whey and its uses as a by-product in dairy plants-by-products in the sugar, oil extraction, vegetables, fruits, meat, poultry and fish industry.

33456-Food and Dairy Additives

Additives (stabilizers, emulsifiers, natural and industrial colorants and their substitutes, preservatives, food and milk substitutes, enzymes, antioxidants, fat substitutes, acid fading agents, pH controls, special food additives, flavoring agents). Nutritional additives – evaluation of handling of food and dairy additives. Benefits and risks of food and dairy additives and their relationship to diseases-the role of food and dairy additives in the behavior, activity, learning and problems of sleeping in children, the laws regulating food additives around the world.

33457-Packing and packaging of food and dairy products

Characteristic, functions and specification of food package – types of package (glass – metals – flexible – paper) – multilayers package – biological and degradable package – edible package-Packaging-Modified packaging-Smart packaging-Active packing-Food and packaging interactions-Packaging-Packaging-Food labels, packaging's, materials used for the manufacture and improvement of packaging properties (printing inks, adhesives, stabilizers), natural and microbiological tests for packaging, reuse and recycling of containers.

34301-Agricultural pests and control methods

Define fungal, bacterial, nematode and viral pathogens- Intrusive flowering plants and to identify the life cycles and behavior of the parasite in infecting the host, and the use of various control methods to limit the spread of pathogens- Studying the economic importance, symptoms of injury and damage, and life cycles of the most important economic insects and other animal pests- the chemistry of various inorganic, plant and organic pesticides- study of the chemical and physical properties of fungicides and bacteria- study of the toxic properties of fungicides, bacterial and microbial- the nature of weeds as a pest and the various ways to combat it.

34401-Field crop pests and control methods

Definition of common diseases in field crops- study of the most important fungal, bacterial, nematode pathogens and parasitic flower plants and ways to isolate and identify them- studying the disease and the disease cycle for some economic crops and setting controls to limit its spread and various methods of prevention- biological resistance methods- Studying the economic importance, symptoms of injury and damage, and life cycles of the most important economic insects and other animal pests that attacks field crops and the various ways to combat it.

34402-Wood tree pests and control methods

Definition of common diseases on wooden trees- study of the most important fungal, bacterial, nematode pathogens and parasitic flower plants and ways to isolate and identify them- studying the disease and the disease cycle for the most important economic insects that attack woody trees and the various ways to combat it.

34403-Horticultural crops pests and control methods

Definition of common diseases on horticultural crops- study of the most important fungal, bacterial, nematode pathogens and parasitic flower plants and ways to isolate and identify them- studying the disease and the disease cycle for horticultural crops and establishing controls to limit its spread and various methods of prevention and resistance- symptoms of injury, damage and life cycles for the most important economic insects that attack horticultural crops and the various ways to combat it.

34405-Biotechnology and its applications in plant protection

Introduction to genetic engineering- studying DNA and special enzymes- Identification of the required gene, methods of isolation and synthetic gene synthesis- methods for introducing genes into plant cells- producing plants that are resistant to plant diseases and insects, and producing plants that are resistant to salinity and improving the economic characteristics of plants.

34407-protected crops pests and control methods

Definition of common diseases in greenhouses- studying symptoms of injury and damage, and life cycles of the most important economic insects and other animal pests that attacks protected crops and the various ways to combat it.

34419-Pests and diseases of palm, olive and fig

Definition of common diseases on palm, olive and fig- study of the most important fungal, bacterial, nematode pathogens and parasitic flower plants and ways to isolate

and identify them- studying the disease and the disease cycle for these crops and establishing controls to limit its spread and various methods of prevention and resistance- symptoms of injury, damage and life cycles for the most important economic insects that attack these crops and the various ways to combat it.

35301-Biotechnology for microorganisms

Structure and function of microorganisms, activity and growth of microorganisms in various environments and factors influencing it, genetic and metabolic regulation of enzymes formation and function, microbial metabolism of growth and energy production, interaction of bacteria and bacterial viruses, isolation and identification and keeping of important and useful microbes. Modern trends in biotechnology and their relation to microbial processes. Microorganisms and their uses in food, industry, agriculture and medicine, Bioreactors, growth media, design and operation of fermentation reactors, strain testing, conservation and deterioration, microbial cell stabilization, enzymes and their applications.

35405-Biotechnology and its agricultural applications

Integrated discussions on recent trends in genetics and biotechnology in different fields, biological engineering and its relationship and impact on agriculture, plant production of new materials.

35411-Biotechnology in environmental protection and energy production

Bacterial transformation, preparation of small and large plasmids, analysis by restriction enzymes and construct of genetic recombination, genetic mapping, electrophoresis, Southern and western blotting, HPLC-TLC, SSR-PCR, biomass and energy, energy conversion techniques, bacteria and algal systems, energy farms, Full use of crops for production of alcohol from agricultural waste, hydrogen production systems as fuel and carbon reduction, industrial photosynthesis.

Innovation and Entrepreneurship

Social Networks

CoursGénéraux

Exigences universitaires, collégialesoudomaine

19315, 03327, 05451, 05356, 05357, 17310, 17410, 14308, 16401,

30100-Droits de l'Homme

Définition des droits de l'homme conformément aux traités et chartes internationaux, histoire de l'étude des droits de l'homme, droit anglais, droit français, la constitution américaine et ses amendements, classification des droits de l'homme, droits de l'homme selon les lois divines, la Charte des Nations Unies et les organisations internationales et régionales, luttant contre la corruption, en application dans le domaine d'étude.

30110-Langue Anglaise (Général)

30220- Introduction à l'Informatique

30399-Formation Civile Spécialisée (dans le domaine de …….)

Ce cours traite la formation scientifique appliquée de l'étudiant dans les champs de travail et la collecte de données liées à son domaine d'études, en plus, effectuer des visites scientifiques dans des institutions, des établissements, des agences, des fermes et des établissements scientifiques et de recherche liées à la nature de l'étude.

30400-Conception et Planification de Projets de Fin d'Études

Introduction à la recherche scientifique. Nature, caractéristiques, étapes de préparation, sources, moyens et méthodes de recherche scientifique. Groupe de (3-5) étudiant(e)s se forme et en coordination avec un encadrant académique, un chef d'équipe est choisi. Préparer une proposition pour le projet de fin d'études qu'il s'agisse de résolver des problémes scientifiques. Réaliser une nouvelle idée. Réaliser un min-projet. La proposition de projet est présentée et discutée à la fin du semestre d'automne.

30401-Projet de Fin d'Études

L'étudiant(e) se consacre à une journée de la semaine, au moins, pour mettre en œuvre le projet proposé dans le cours (30400). Le superviseur suive le travail du projet durant le semestre. À la fin du semestre de printemps (deuxième semestre), les étudiant(e)s soumettent un rapport sur le projet réalisé.

30410-Langue Anglaise - Rédaction Scientifique

Concepts liés au domaine d'études.

30411-Créativité Artistique

Le cours vise à développer des méthodes de pensée créative et à créer des méthodes pour développer la fluidité et l'individualité des étudiants en étudier arts visuels, esthétique de la forme, théories des couleurs et de l'art sonore, où la musique se déguste, et pour améliorer les niveaux de sensations et de cognition. En plus, augmenter l'éfficacité des compétences personnelles et des capacités humaines des diplômés pour suivre le rythme et l'innovation nationals et internationals du XXIe siècle.

30412-Culture Sportive

Ce cours vise à fournir aux étudiant(e)s universitaires des concepts généraux sur l'importance éducative du sport et de l'éducation physique. Le cours aborde également le rôle du sport dans la santé et le développement physique des jeunes hommes et femmes, et le rôle du sport dans le développement de l'appartenance à la Société égyptienne. L'étudiant(e) étudie les différents types de compétitions sportives locales, internationales et olympiques et leurs règles générales. Le cours traite le rôle du sport, de l'économie et du tourisme sportif dans le développement de la société.

30413-Tourisim et Societé

Ce cours vise à mettre en évidence comment l'activité touristique et l'industrie touristique incluant ses secteurs se chevauchent dans le cadre de la société d'accueil. Le cours comprend également la nature, les limites et les caractéristiques des relations sociales et de la vision mutuelle entre les touristes et les résidents locaux. Cela s'ajoute au rôle du tourisme dans la réalisation du changement social et culturel et les manifestations de ce changement dans la société d'accueil, en référence aux expériences mondiales les plus importantes à cet égard.

Ce cours traite la relation des hôtels avec l'environnement et leur rôle dans sa préservation à travers les hôtels dits «verts», avec une étude de la pratique de ce type d'hôtels et des défis auxquels ils sont confrontés aux niveaux international et local appliqués en Égypte. Il traite également l'étude des hôtels écologiques et de leur relation avec l'environnement et le développement communautaire.

Il aborde également le rôle du guide touristique en identifiant la nature des tâches intégrées qu'il effectue dans le domaine de l'orientation touristique et leurs effets positifs pour gagner la confiance du visiteur, qu'il s'agisse de citoyens ou d'étrangers, et de sensibilisation au tourisme.

30414-Premiers Secours

Ce cours donne une idée générale des bases des premiers secours, grâce auxquels les participants à ce cours sont en mesure d'acquérir les compétences nécessaires pour faire face aux situations d'urgence afin de préserver la vie et de réduire l'apparition de complications futures ou l'une de ses conséquences jusqu'à l'arrivée des secours médicaux.

30415-Argumentation

Ce cours vise à montrerl'importance des processus de réflexion et à développersescompétences: telles que l'analyse, la synthèse, la déduction, l'inférence et les capacitéscognitives: telles que la capacité de critiquer, de scruter et la capacité de comprendreconsciemment. les sujetssuivants: Le sens de la pensée critique ou critique: langage et réforme de la pensée critique dans l'histoire, de la pensée philosophique. La pensée critique et la pensée scientifique et la relation entre la pensée critique et la logique et la capacité à déduire la révolution de l'information et de la communication et son impact sur l'efficacité de la pensée critique.

30416-L'homme et l'Environnement

Le coursaborde les questions environnementales, leur conception et leurs relations avec l'homme et les écosystèmes. Aborde les pollutions environnementales (pollution de l'air, pollution des eaux, pollution des sols). L'étudiant(e) étudieégalement les types de déchets et leurs impacts sur la pluieacide, économie, environnement et législationsenvironnementales.

30417-La santé Reproductive

Ce cours vise à aider l'étudiant(e) à comprendre la santésexuelle et les droits reproductifs et leur relation avec le développement familial et communautaire, enmettantl'accent sur l'importance de la santé des femmes et leurrôle dans la société. L'étudiant(e) étudieégalement les méthodes de planification familiale, les méthodes et la prévention des maladies transmises par les pratiques sexuelles.

33351-Sécurité Alimentaire et Laitière

Un aperçu de la sécurité alimentaire et laitière. Maladies d'origine alimentaire et laitière. Pathogènes d'origine alimentaire et laitière. Types de risques liés aux aliments et aux produits laitiers (risques biologiques, risques chimiques, risques physiques). Virus bactériens et leurs applications dans la sécurité des aliments et des laits. Toxines des aliments et des produits laitiers. Allergènes dans les aliments et les produits laitiers. Inhibition des agents pathogènes et des toxines lors de fabrication. Systèmes de gestion et d'évaluation des risques.

33352-La Biotechnologie dans le Domaine de l'Alimentation

Une introduction à la biotechnologie et à ses étapes de développement. Principes de base de la biochimie et de la biologie moléculaire. Techniques modernes en biochimie et biologie moléculaire. Ingénierie métabolique dans les bactéries pour produire des ingrédients alimentaires. Techniques utilisées pour la production microbienne dans les ingrédients alimentaires. Héritage d'initiateurs de bactéries lactiques. Applications du génie génétique dans les populations de bactéries lactiques. Applications du génie génétique dans la levure de boulanger. Production d'enzymes et leur utilisation dans la fabrication d'aliments et du lait. L'utilisation de la biotechnologie dans la production d'arômes alimentaires. Approche biotechnologique pour améliorer la qualité, la valeur nutritionnelle et prolonger la durée de conservation des fruits et légumes. Biotechnologie et traitement des déchets des usines alimentaires et laitières.

33353-Propriétés sensorielles et physiques des aliments et des laits

Propriétés sensorielles des aliments et des produits laitiers (apparence, couleur, goût, odeur, texture) et leur relation avec les aspects physiologiques et psychologiques de l'homme. Méthodes sensorielles biologiques et leurs applications dans l'évaluation des aliments et des produits laitiers. Propriétés physiques et composition chimique des aliments et des produits laitiers. Ingénierie, propriétés optiques et rhéologiques des aliments et des produits laitiers.

33451-Contrôle de la Qualité des Aliments et des Produits Laitiers

Qualité: rôle et fonction. Le rapport qualité-production. Bases de la qualité des aliments et des produitslaitiers. Programmes de qualité et systèmes de qualité dans l'alimentation et les produitslaitiers: programmes de contrôle de la qualité, systèmesd'assurance de la qualité, systèmes de gestion de la qualité, systèmes de qualitétotale. Normes de qualité ISO, Bonnes pratiques de fabrication, Analyse des risques et maîtrise des points critiques, Inspection des envois alimentaires, Méthodesstatistiques de contrôle de la qualité.

33452-Règles Sanitaires dans les Usines Alimentaires et Laitières

Nettoyage et détergents. Désinfection et désinfectants. Les micro-organismes et programmes des affaires snitaire. Programmes allergènes. Rongeurs; sources de contamination des aliments. Conception et construction d'usines alimentaires et laitières: conditions à respecter, conception technique, air, outillage, élimination et traitement des déchets. Hygiène personnelle: nettoyage et désinfection. Inspection des établissements alimentaires.

33453-Codes, Lois et LégislationsAlimentaires et ProduitsLaitiers

Codes, législation et lois (locales et internationales) en matière d'alimentation et de produitslaitiers. Le rôle des lois et des législations dans la protection du producteur et du consommateur. Organismesassociés aux systèmes de normalisation. Le droit commercial et ses relations avec les différentscontrôles à l'import et à l'export.

33454-Manipulation, stockage et commercialisationd'aliments et de produitslaitiers :

Systèmes de manipulation d'aliments et de produitslaitiers. Fonctions de stockage des aliments et des produitslaitiers. Types de stockage: fixe, aléatoire et flexible. Cycle de magasin. Systèmesd'enregistrement et enregistrements dans les magasins. Concept de marketing. Stratégies marketing. Étude de marché. Cycle de vie des marchandises.

33455-Technique de fabrication des déchetsalimantaires et laitiers

Techniques de fabrication des déchets. Ingénierie du recyclage et son économie. Aspects biochimiques et nutritionnels des produitssecondairesalimentaires et laitiers. Méthodesanalytiquesutilisées pour surveiller les techniques de fabrication critiques. Les sous-produits de la fabrication d'aliments, de produitslaitiers et de biocarburants. Lactosérum du fromage de et sesutilisationscomme un produitsecondaire dans les usineslaitières. Les produitssecondaires de la fabrication de sucre, de jus d'huile, de légumes, de fruits, de viande, de volaille et de poisson.

33456-AdditifsAlimentaires et Laitier

Additifs: stabilisants, émulsifiants, colorants naturels et artificiels et leurssubstituts, conservateurs, substitutsd'ingrédientslaitiers et alimentaires, enzymes, antioxydants, substituts de graisses, acidifiants, régulateurs de pH, additifsalimentairesspéciaux, agents aromatisants. Additifsnutritionnels.

Évaluation de la consommationd'additifsalimentaires et laitiers. Avantages et risques des additifslaitiers et alimentaires. Additifsalimentaires et laitiers et leur relation avec les maladies. Le rôle des additifsalimentaires et laitiers dans le comportement, l'activité, l'apprentissage et les problèmes de sommeil des enfants. Les loisréglementant les additifsalimentaires dans le monde.

33457-Emballages Alimentaires et Laitiers

Fonctions, caractéristiques et spécifications des emballagesalimentaires. Types d'emballages: emballagesenverre, emballagesenmétal, emballagesen plastique, emballagesen papier. Emballagesmulticouches. Emballagesbiodégradables. Emballages comestibles. Emballage sous atmosphèremodifiée. Emballage intelligent. Emballageactif. Interactions entre les aliments et les emballages. Carte alimentaire. Couverclesd'emballage. Matériauxutilisés dans la fabrication et l'amélioration des qualitésd'emballage: encresd'imprimerie, adhésifs et attaches. Tests physiques et microbiologiques des colis. Réutiliser et recycler les contenants.

35411-La biotechnologie dans la Protection de l'Environnement et la Production d'Énergie

Transformation bactérienne. Préparations de petits et grands plasmides. Analyse avec identification des enzymes et des structures géniques. Cartographie génétique, SSR-PCR, HPLC - TLC, Southern et Western blotting. Énergie issue de la biomasse. Technologie de conversion d'énergie. Systèmes de bactéries et d'algues. Fermes énergétiques. Pleine utilisation des cultures. Production d'alcool à partir de déchets agricoles. Système de production de carburant hydrogène et réduction du carbone. Photosynthèse industrielle.