



Undergraduate Internal Bylaw and Curricula Heliopolis University (Credit Hour System)

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Undergraduate

Internal Bylaw and Curricula
for Heliopolis University
(Credit Hour System)

In the Name is Allah, the Creator, the merciful

“All who have meditated on the art of governing mankind have been convinced that the fate of empires depends on the education of youth.” (Aristotle)

Preface

Heliopolis University for Sustainable Development (HUSD) was established in 2009 by the Presidential Decree number 298/2009 with three degree-granting faculties: Faculty of Engineering, Faculty of Business & Economics, and Faculty of Pharmacy and Drug Technology.

The study at Heliopolis University started in the academic year 2012-2013 with the aim to pioneer introducing the concepts and principles of sustainable development to the students and the Egyptian community. Sustainable development refers to the challenges of reducing global inequity and improving wellbeing, while reducing threats to the earth's systems from industrialized production and consumption.

Heliopolis University strives for the Sustainable Development consciousness, economic solidarity, social responsibility, and environmental balance in Egypt and the world. The degree programs offered at Heliopolis University addresses key topics and theories of sustainable development through a multi-disciplinary renewed approach that integrates teaching, learning, research, and practice. In addition, Heliopolis University offers a unique Core Program that is crucial for sustainability and human development.

Heliopolis University motivate the students to develop understanding and relate to their social, economic, scientific, and political surroundings. It abets them to evaluate the knowledge and practices concerning sustainable development affecting opportunities for community development and scientific growth in Egypt and in the world.

Chapter 1

University Strategy

Vision

Heliopolis University is a pioneer scientific establishment strives for the sustainable development of individual consciousness, economic solidarity, social justice, and environmental balance in Egypt and the world.

Mission

At Heliopolis University, we empower our students to be the champions of sustainable development in different spheres of life. We provide a place where new ideas meet fertile ground for further research and teaching. Our education combines teaching, research, and practice with a uniquely humanistic core program, developing curious and creative mind.

Aims

1. Provide a high quality and challenging educational and research experience in which students can develop both individually and intellectually.
2. Enable students to gain a broad understanding of the issues related to sustainable development and relevant scientific disciplines.
3. Develop students' key ethical values that will enable them to be competitive in the job market and/or manage their own enterprises with a vision to unceasingly contribute to community development.
4. Help students to identify and achieve their own individual goals and make a valuable contribution to their society, and to the world at large.
5. Develop independent person immersed in the humanities who can identify and resolve problems creatively, individually, and communally.

Strategic Objectives

1. Establishing a welcoming environment.
2. Providing state of the art facilities.
3. Establishing a research based University.
4. Including qualified national and international professors.

5. Providing meaningful, rich, and exciting student activities.
6. Focusing on promoting sustainable development concepts within the educational program, in order to ensure that all courses teach the concept well and appropriately.
7. Promoting, inviting and welcoming contributors in the field of sustainability and working closely with other higher education Egyptian and non-Egyptian institutions.
8. Implement the most modern and advanced management techniques to provide the best services for the students.

Chapter 2

General Concepts and Terminology

Article 1: The Official Name

These regulations shall be cited as “***Heliopolis University Internal Bylaw and Curricula***”

Article 2: Terminology

The following terms have the associated meaning beside each:

University	: Heliopolis University for Sustainable Development (HUSD).
University Council	: Heliopolis University Council.
Regulations	: Heliopolis University Academic Regulations.
Credit hour	: A standard unit of measurement used to specify course load per semester in relation to other courses.
Contact hour	: Actual amount of time elapsed in a lecture, laboratory, etc.
Academic program	: Knowledge that leads to a scientific degree.
Study plan	: The courses list that is required for a study program to gain a scientific degree.
Faculty	: One of the faculties of Heliopolis University.
Academic year	: The academic year consists of three semesters; fall and spring semesters in addition to an elective summer semester.
Study load	: The group of credit hours that the student registers in per semester.
Scientific degree	: The awarded degree after completing its requirements.

Article 3: Provision

Provision of these regulations shall be applicable to the regular students registered for a scientific degree at the University by the next year after issuing the ministerial decree.

Article 4: University Faculties

Heliopolis University includes the following faculties:

1. Faculty of Engineering
2. Faculty of Business and Economics
3. Faculty of Pharmacy
4. Faculty of Physical Therapy
5. Faculty of Organic Agriculture

It is also possible to establish new faculties after completing all the required procedures.

Chapter 3

Admission Regulations

Article 5: Admission General Requirements

Heliopolis University fully complies with the admission regulations of the Private Universities Council of the Ministry of Higher Education (HUSD). HUSD receives students twice a year; in the fall and spring semesters. Students must apply for admission during the official application period, which is announced by the University's Admission Office. Students applying for admission at a University faculty must meet the following requirements:

- 1- Should be Egyptian. Non-Egyptian students can also be accepted according to the related rules.
- 2- Must be graduated from the general secondary school or equivalent. Students join faculties through a competitive process, based mainly on the results of the secondary school Final Exam (*Thanaweya Amma*). It is also possible for graduate students to apply for admission.
- 3- Should pass the Admission Exam.
- 4- Must enroll as full-time student; otherwise the student must have permanent permission from his/her workplace to accommodate the of Attendance Policy at the university.
- 5- All kinds of required fees must be paid in full.

Article 6: Admission Documents

The following documents are required for Admission:

- 1- An original copy of the results of the secondary school Final Exam.
- 2- An original copy of the birth certificate.
- 3- Six recent passport size photos of size 4X6.
- 4- A signed medical investigation document.
- 5- Military Service Form No.2 for Egyptian male students.
- 6- Sports Incentive Certificate for eligible students.
- 7- Any other document(s) that might be required by the faculty.

Article 7: Scientific Degree Awarding

According to the request of the Faculty Councils, the University awards the Bachelor's degree in one of the fields of specialization that are offered by the faculties after completing the degree requirements. These degrees are:

- B.Sc. Degree in Engineering (According to the Academic Program).
- B.Sc. Degree in Business and Economics (According to the Academic Program).
- B.Sc. Degree in Pharmacy and Drug Technology.
- B.Sc. Degree in Physical Therapy
- B.Sc. Degree in Organic Agriculture (According to the Academic Program).

Chapter 4

Study and Registration System

Article 8: Educational System

Heliopolis University applies the credit-hour system in all programs. Accordingly, the academic year is divided into two semesters of 15 weeks each; fall semester and spring semester, in addition to one non-compulsory Summer Semester of 7 weeks.

Article 9: Credit hours / Contact hours

The Credit Hour is a standard unit of measurement used to specify course load per semester in relation to other courses. The Contact Hour is the actual time of a lecture, laboratory, etc.

Each credit hour equates to:

50 contact minutes per week of theoretical lectures,
100 contact minutes per week of either tutorial or practical classes, and
150 contact minutes per week of workshops.

Article 10: Academic Programs

The study plan in each faculty contains one or more academic programs, which lead to a Bachelor's degree in the major field of program. The faculty should offer one or more groups for each course in the academic program. These course groups should be offered in different time slots, location and lecturer. The academic program leads to a scientific degree. The student should be able to choose a group of courses that improve his/her skills in minor specialization within the major specialization of the program.

Article 11: Graduation Minimum Credit Hours Required

The minimum number of credit hours required for graduation is specified in the study plan of each faculty for each program. Generally, it ranges from 130 Cr to 180 Cr, depending on each program.

Article 12: Course Coding

Each course has a unique code (number). This number contains information about the faculty and specialization of the study program. It also contains information about the level of the course in the study program. As shown in the following figure, the course number is a 4-digit code, in which each digit has a special meaning as follows:



D_4 specifies the faculty code; 0 for University requirement (core program) courses, and 1 for the faculty of Engineering, 2 for the Faculty of business and economics, and 3 for the Faculty of Pharmacy and drug technology, 4 for the Faculty of Physical Therapy, 5 for the Faculty of Organic Agriculture, etc.

D_3 specifies the code of the scientific department in the faculty that offers this course. The value of this digit may have a number from 1 to 9.

D_2 specifies the group level inside the department. The value of this digit may have a number from 0 to 9.

D_1 specifies the course level inside the group, either mandatory or elective. The value of this digit may have a number from 0 to 9.

Article 13: Academic Program Curriculum

The curriculum of all academic programs in the University includes the following group of courses:

- (a) **University requirements (Mandatory Core Program):** Is a group of 12 credit hours courses to develop the personality of students. They *must be completed* by all students as part of the graduation requirements for the chosen field of specialization.
- (b) **University requirements (Elective Core Program):** are 6 credit hours group of designated courses that students can *select from* in order to complete the university elective courses requirements in their program.
- (c) **Faculty Requirements:** are offered by the faculty council and approved by the University Council. These requirements include a number of credit hours distributed over mandatory and elective courses as specified by the faculty council.
- (d) **Academic program requirements:** are offered by the faculty council and approved by the University Council. These requirements include a number of credit hours distributed over mandatory and elective courses as specified by the faculty council.

Article 14: Academic Advising

The Academic Advisor is a faculty member who is assigned the responsibility of monitoring and coaching a group of students as well as assisting them in developing their study plans and schedules.

The Academic Advisor assists students in other academic issues or problems encountered throughout their study period. The Academic Advisor also validates the Registration/Add/Drop forms.

Article 15: Program Coordinator

The Program Coordinator is a faculty member appointed by the faculty dean (usually the department head of the student's chosen program) and assigned the responsibility of organizing the registration process and its requirements as well as the responsibility of facilitating the communication between the faculty, the academic advisors and the university administration office regarding all academic matters.

Article 16: Registration

Registration dates are published in the academic calendar and semester schedules for both new and continuing students. At registration, students will meet with the Academic Advisors to select courses appropriate to their study plan. The Academic Advisors will assist and validate the students' completion the Registration Form.

The student is considered to be enrolled after he or she presents all the required documents to the Registration Office and pays the outstanding fees.

The Registration Office generates individual student academic files for all students. This file contains the student's official documents: Semester Enrollment Forms, Semester Academic Transcript, and other documents including medical certificates, academic warnings, Add and Drop Forms, etc. The student's academic file is updated at the end of each semester.

The Program Coordinators and Academic Advisors must have copies of these files to follow up the students' academic progression with the academic advisors.

Article 17: Course Prerequisite

Successful completion of a course's applicable prerequisite course(s) is a must for registration in a course. This rule might be violated in justifiable conditions advised by a recommendation from the faculty dean and approved by the University Vice president.

Article 18: Study Load

The student is responsible for the study load that is adequate to his/her abilities and comprehension. The Academic Advisor examines the student's records to advise him/her to take a number of courses appropriate to his/her academic achievement at the faculty with consideration to the following:

1. The maximum number of credit hours is 18 per week during the fall and spring semesters. This number of credit hours may however reach 21 if the Student's GPA is 3 or more. This may be changed if the student is expected to graduate in the semester and advised by the student's academic advisor.
2. In the summer semester, the maximum number of credit hours is 7.
3. The faculty council must approve other cases of violating the credit limits

Article 19: Course Registration, Add and Drop Deadlines

With due observance of maximum and minimum study load, the following is to be considered.

1. Semester registration is completed during the first week of the semester and classes start at the beginning of the second week.
2. Student may Add, and/or Drop any course before the deadline, which is the second week of any semester.
3. Summer Semester Course(s) Registration, Add, and Drop should be completed during the first week, and classes start the beginning of third day in the first week.

Students should fill in the Registration, Add, and Drop Forms and have them approved by the Academic Advisors. These forms are then submitted to the Registration Office.

Article 20: Courses Withdrawal

Students can withdraw from any course after an approval by the academic advisor and before the withdrawal deadline (the 8th week for the fall and spring semesters, and 4th week for the summer semester). A grade of "W" for that course will be given and it will be excluded from the GPA calculation, provided that the student didn't exceed the attendance limit.

If the withdrawal is done after the withdrawal deadline period, a grade of "F" will be applied, indicating failure in the course.

Article 21: Semester Withdrawal

1. A student can withdraw from a complete semester after having an advisor's signature for semester withdrawal. The withdrawal form must be submitted before the end of the 10th week for the fall and spring semesters, and 5th week for the summer semester. The faculty council must approve this withdrawal.
2. The faculty council may consider the semester withdrawal request forms that submitted after the withdrawal period mentioned in the first paragraph and the council has to take the suitable decision.
3. The total number of withdrawn semesters must not exceed four (4) semesters.

Article 22: Admission Postponement

1. A newly enrolled student who does not register during the registration period is considered withdrawn from the semester. If the student does not register by the following semester he or she shall forfeit his/her place at the University.

2. A continuing student who does not register during the announced Registration, Add, and Drop period is considered withdrawn from the semester.
3. A student may postpone his/her admission at the University for one semester. The faculty dean must approve this, if the student submits his/her request during the registration period.

Article 23: Study Break

A continuing student who registered for a semester and breaks his/her study plan, and does not apply for semester withdrawal is considered to be absent.

Article 24: Changing Study Program

A student who decides to change his/her program of study, or apply for a new program, in the same faculty should discuss the program change with his/her Academic Advisor and the Program Coordinator.

The student must complete a request form for program change and get it approved from the faculty dean. If approved, credit earned in the previous program *may be* credited toward the new program upon evaluation by the coordinator of the new program.

Article 25: Credit Transfer

Upon the recommendation of the relevant program coordinator and the approval of the faculty council, students may be allowed to transfer some credits previously completed at other universities or faculties according to the following conditions:

1. Transferred credits are part of the degree requirements.
2. The final courses grade must be "C" minimum or equivalent.
3. The total credit hours of the transferred courses do not exceed 60% of the total credit hours required to obtain the relevant degree.

In the case that a student engages in an official exchange program between Heliopolis University and an external institution (either national or international), before engaging in this program, the academic advisor or the program coordinator must agree with this external institution the exact courses that the student will study. The courses should align with the student's study program and contribute towards the completion of the students overall Credit Hours and graduation. Furthermore, HU will abide by the grade distribution of the external institution and will record the Letter Grade provided by this institution. All courses taken during this excursion will be transferred after the completion of all administrative requirements.

All successfully transferred courses are accounted in the GPA calculation.

Article 26: Blended, & Distance Learning

It is allowed for some courses to be taught through blended distance learning facilities. These include television, internet, etc. In all cases, the final examination must be administered on campus at the university or at an approved examination center off-campus following university examination regulations and protocol. All related regulations of the blended learning are followed, including the face-to-face meetings, reports, case studies, and others.

Article 27: Student Attendance Policy

A student is required to attend all classes for all courses in which he/she registers. A student who is absent for more than 25% of the hours required for a course is given a warning that explains the consequences of not attending courses without a valid excuse. A student, who is absent for more than 30% of the hours required for a course without a valid excuse acceptable to the faculty council, or a medical excuse, will be prohibited from taking all the following examinations scheduled for that course and shall be given grade "F".

Article 28: Warned Student Registration

A student who has an Academic Warning can register for a maximum of 10 Credit Hours during the following semester. With the approval of the faculty dean and according to the advice of the academic advisor, this student may register in certain conditions for more than this limit of study load.

Article 29: Maximum Study Period

The applied study system allows the students to complete their study program in the minimum time. However, the following restrictions should be considered:

1. The maximum period of a study program of less than or equal to 150 credit hours is 14 semesters, including the withdrawn semesters without counting the summer semesters.
2. The maximum period of a study program of greater than 150 credit hours is 18 semesters, including the withdrawn semesters without counting the summer semesters.
3. The university council may allow a student to exceed these maximum specified periods in justifiable cases subject to a recommendation from the faculty council.

Article 30: Special Credit Students

Special Credit Students are defined as students who wish to enroll in a course(s) to get some experience in the field of these courses but not pursue a degree, diploma, or certificate. Special Credit Students register officially at the University and pay regular tuition fees, but are not assigned Academic Advisors.

Students who wish to audit courses shall be admitted, upon space availability basis, and shall not displace credit-seeking students. In this case, no credit is awarded, and no examinations are administered. A grade "AU" is recorded to indicate 'Audit'.

Article 31: Dismissal from the University

A student is dismissed from Heliopolis University in one or more of the following cases:

1. If student exceeds the permitted number of withdrawal according to article (21).
2. If student gets two academic warnings during two consecutive semesters or when he/she gets three academic warnings according to article (48).
3. If student does not finish his/her studies in the maximum period defined by article (29).
4. If a decision has been taken against the student because of Conduct and/or Behavior Violation.
5. If student is prevented from attending the final examinations of all courses during two semesters.

Article 32: Registration Termination

A student who terminates his/her registration at the university has no right to register again except after submitting a new Application Form, and an official request stating clearly the reasons of his/her re-register, which must be approved by the faculty council, subjected that not more three years have passed after the termination. In case of approval, the student is to be treated as a continued student according to his/her previous position before the Registration Termination.

Article 33: Study Level

The following table indicates the student position and the study level according to the completed credit hours for a study program of less than or equal to 150 credit hours:

Study Level	Student Level	Percentage of the earned Credit hours
0	Freshman	From 0% to 25%
1	Sophomore	More than 25% to 50%
2	Junior	More than 50% to 75%
3	Senior	More than 75% to 100%

The following table indicates the student position and the study level according to the completed credit hours for a study program of greater than 150 credit hours:

Study Level	Student Level	Percentage of the earned Credit hours
0	Freshman	From 0% to 20%
1	Sophomore	More than 20% to 40%
2	Junior	More than 40% to 60%
3	Senior-1	More than 60% to 80%
4	Senior-2	More than 80% to 100%

Chapter 5

Examination Regulations

Article 34: The Course

The course is a subject of study (body of knowledge) given during one semester and ends with a final examination. Students registered in a course may be divided into one or more groups, where each group is assigned an instructor. The program coordinator assigns a coordinator for each course that has many groups. The *course coordinator* coordinates with the group instructors concerning the contents of the course, textbooks, examinations and grades.

The course instructor should inform students at the beginning of each semester of the course assessment and evaluation methodology, as well as the time of periodical examination.

Article 35: Semester Coursework

The work and activities of a student for a course are evaluated by two marks; *semester Coursework mark* and *Final Exam mark*. The semester coursework mark is the mark that represent the student effort during the semester and contains examinations marks applied, training projects, and different academic activities of the course. All assignments, reports and researches shall be returned to the student after correction completion and grades registration.

If a student absents him/herself from an examination that is scheduled before without a valid reason acceptable to the course instructor shall give a zero grade for this examination. This zero grade is included in the calculation of the semester coursework mark. The course instructor may consider a make-up examination for the absent student if his/her absence excuse is acceptable.

Article 36: Final Examination

The course final examination is a general examination in the course, and it is held at the end of each semester. The Final Examination can and may include theoretical, applicable, oral, and laboratory examinations according to the needs of the course. The final examination mark is the mark which the student gets at the end of the semester examination for each course.

Article 37: Final Course mark

The final course mark is the sum of the semester coursework mark and the final examination mark for each course is recommended to be according to the following percentages: 50% of the maximum course mark is dedicated for the semester work and 50% for the final examination, although this is not required for all courses and may be changed based on the recommendation of the course instructor, department or faculty under which the course is taught. The final course mark must be an integer number, no floating numbers are accepted.

Article 38: Course Maximum Mark

The maximum mark for each course is 100 marks. If marking is done to a different maximum, the final mark should be scaled to 100.

Article 39: Evaluations and Grades

The following table indicates how to convert a percentage into a 4.0 Grade Point Average (GPA).

Course Grade (%)	Symbol	Points
[93, 100]	A	4.0
[90, 93[	A-	3.7
[87, 90[	B+	3.3
[83, 87[	B	3.0
[80, 83[	B-	2.7
[77, 80[	C+	2.3
[73, 76[	C	2.0
[70, 72[	C-	1.7
[67, 70[	D+	1.3
[63, 67[	D	1.0
[60, 63[	D-	0.7
[0, 60[	F	0.0

The symbols that are not calculated in the GPA are as follows:

Symbol	Evaluation	Explanation
I	Incomplete	Must be removed by the end of eighth week of the next term.
W	Withdrawal	Changed to "F" if the withdrawal is done after the specified deadline.
AU	Audit	No credit is awarded, and no examinations are required.
S	Satisfactory	Pass course without grade
CO	Continued	Continued course for more than one semester.

Article 40: Course Grade Points

The Course Grade Points are calculated by the number of credit hours required for the course multiplied by the points corresponding to the final mark of the relevant course.

Article 41: Results

The course instructor is responsible for the correction of the examination papers of his/her course, for the revision of the grades, and their registration in their respective course transcripts and for handing them over to their respective faculty within a maximum period of 72 hours after the final date of examinations mentioned in the academic calendar.

Article 42: Semester Grade Point Average

The semester Grade Point Average (GPA) is a numerical academic evaluation method of the student's work during a semester. It is calculated by dividing the grade point total by the total number of credit hours earned for all courses taken within one semester and rounded up to the nearest two digits.

Article 43: Grade Point Average

The Grade Point Average (GPA) is a numerical academic evaluation method of the student's work during a semester. Generally, the GPA is calculated by dividing the grade point total by the total number of credit hours earned for all courses taken within one semester and rounded up to the nearest two digits.

When a student completes all the study program requirements, the Cumulative Grade Point Average (cGPA) indicates the assessment of all courses taken throughout the entire study period.

The cumulative GPA is calculated by dividing the Grade Point total by the total number of credit hours earned for all courses of the academic program. In the case that a student has failed a course, or has repeated a course to improve their grade, the only the highest grade the student has received in that course will be calculated in the cGPA. Decimals in the GPA & cGPA beyond 2 places are truncated, and afterwards rounded up to one decimal place. The GPA may range from 0.0 to 4.0.

Article 44: Assessment Method

The recommended distribution of the grades for both practical and theoretical courses are as follows:

	Practical Courses	Theoretical Courses
Midterm Exam.	10 %	20 %
Quizzes	10 %	20 %
Punctuality and Participation	10 %	10 %
Practical (Lab, workshop, etc.)	20 %	-
Final Assessment	50 %	50 %
Sum	100 %	100 %

If a course instructor requires a different grade distribution for their course, the instructor may do so provided it is done within the university accepted practices and clearly communicated to the students in a transparent manner.

This grade distribution is also subject to approval or rejection by the department or faculty.

Article 45: Academic Honor

Students with a cumulative GPA of 3.5 and above are included in the honor list, if the student has not failed in any course during his/her study in the university and finished not less than 70% of the program requirements in the University.

Article 46: Incomplete Grade

An Incomplete Grade is a temporary grade of "I" that is given for incomplete course work due to justified circumstances. The course instructor may accept the student's request if the student submits his/her request for an Incomplete Grade before the final exam. It is the student's responsibility to contact the instructor regarding work to be completed for the removal of the "I" grade. The student must complete the required course work before the end of the following semester, or else the "I" shall be changed to grade "F".

Article 47: Absence from Final Examination

Student who does not attend the final examination will have a mark of zero. Upon urgent necessity, the student might be given a make-up examination before the end of the following semester at most. The student's mark is then adjusted according to his/her result in this make-up examination. The decision to administer a make-up examination is taken by the faculty council according to the program coordinator advice.

Article 48: Academic Warning (Probation)

At the end of any academic semester, students obtaining a GPA of less than 2.00 are issued an academic warning put on Probation. Students on probation and are only permitted to register for a maximum of 10 Credit Hours in the following semester. If academic warnings are issued in three semesters and/or for two consecutive semesters for a student, the university council may suspend this student.

Article 49: Course Repeat

If a student fails in any Mandatory course, he/she has to retake this course when it is available and sit for a re-examination, but the Elective courses can be retaken and/or changed. The student must pay the regular course repeat tuition fees. The grades of failed courses are not calculated in the GPA, however they do appear on the student's academic transcript. It is possible for a student to repeat a course in which he/she has passed before with lower grade to improve his/her GPA. In this case, and after paying the regular course repeat tuition fees, the course credit hours are calculated once and the new

grade will be recorded on the student's transcript. Students are not allowed to repeat a course that he/she has passed before more than two times. Exceptions may be granted based on the recommendations of the faculty council.

Article 50: Academic Integrity

Any form of plagiarism, cheating, falsification, impersonation, evidence of concealment or fabrication of results are not tolerated in Heliopolis University. The minimum penalty for such violations is failing the course in which this violation is committed. In certain conditions, the penalty may reach dismissal from the University, either for a specific number of semesters, or dismissed from the university entirely, based on the circumstances.

Article 51: Marks Sheet

For each group of students registered in a course there must be a Final Mark Sheet in which the student's final marks and grades are recorded. This sheet displays the student's name, academic scores in the registered courses, Final Examination attendance record, the semester coursework marks, Final Examination mark and grades, in addition to other academic remarks.

Article 52: Final Examinations Preparations

Without violating these regulations, the faculty council states the necessary preparations for the Final Examinations.

Article 53: Degree Plan Form

To be eligible for graduation, students must apply for a "*Degree Plan Form*" one semester before the graduation semester. This form maps out all completed courses as well as the remaining courses relevant to the study program. It insures that all the degree requirements have been completed. The form must be conducted under the supervision of the Academic Advisor and approved by the Program Coordinator. Copies of this form are supplied to the main Registration Office. This form must also include a student financial clearance statement.

Article 54: Degree Requirements

Students are awarded the Bachelor or Licentiate Degree after completing the following requirements:

1. The fulfillment of the minimum credit hour requirements in the program study plan as specified in the curriculum of the relevant faculty.
2. Achieving a final GPA grade of at least 2.0 in order to be awarded the relevant academic degree.
3. The completion of studies within the specified period applicable to the study program according to article (29).
4. Submitting a financial clearance statement.

Article 55: Explanation of these Articles

The university council has the right to explain the articles of these regulations.

Chapter 6

University Requirements (Core Program)

Heliopolis University Core Programs is an integrated learning experience that aims to develop students' capacity for innovation and social responsibility. Throughout the Core Programs courses, the University aims to create:

- ✓ *Interactive Learning*; where students are artists and thinkers investigating real community problems and cooperating to develop creative, applicable solutions.
- ✓ *Challenging Learning*; where students at all levels are motivated and supported to do more than they believe they can.
- ✓ *Communicative Learning*; through inspiring presentations, exhibitions and workshops, students and teachers build a clear vision of pathways to achievement.

Core Courses are designed to empower students to realize their capabilities and enhance skills critical to problem-solving, critical thinking, persistence toward excellence, as well as social responsibility. The Core Program study plan includes four course streams. This is indicated in the following table:

No.	Stream	Courses
1	Language, Communications and Enterprise	1 Academic English Writing 2 German Language 3 Communication skills 4 Creativity & Entrepreneurship 5 Arabic Literature
2	Arts, Culture, Development and Innovation	1 Perception Actuality 2 Diversity Integration 3 Communication Through Arts 4 Practicing Individual Presence 5 Multi-focus to Arts 6 Art Creative Processes 7 Consciousness Developments to Arts 8 Art Project 9 Culture and History 10 Egyptology
3	Social Science	1. Research Methodology 2. Philosophy 3. Human Rights and Politics 4. Sociology 5. Principals of Law 6. Psychology
4	Nature and Community	1 Sustainable Development 2 Deep Ecology 3 Biology 4 Evolution

University Requirements (Core Program) Study Plan

The core program study plan contains 12 mandatory credits and 6 elective credits. All University students must take the 12 mandatory credits. Each student can choose 6 elective credits from the available elective course list. The University council assigns a committee for each course to develop its specs, and to follow up its reports and files according to the university internal quality assurance system.

Course Code	Course Name	Pre. Code	Prerequisite Name	Lec.	Tut.	Lab.	WS	Sum	Cre. Hours
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Mandatory Courses

12 Credit Hours

0111	Academic English Writing 1			0	2	0	0	2	1
0411	Sustainable Development			1	0	0	0	1	1
0211	Perception Actuality			0	2	0	0	2	1
0113	German Language1			0	2	0	0	2	1
0122	Academic English Writing 2	111	Academic English Writing 1	0	2	0	0	2	1
0233	Communication Through Art			0	2	0	0	2	1
0156	Creativity and Entrepreneurship			0	2	0	0	2	1
0157	Arabic Literature			0	2	0	0	2	1
0266	Art Creative Processes			0	2	0	0	2	1
0269	Culture and History			1	0	0	0	1	1
0371	Philosophy			1	0	0	0	1	1
0382	Human Rights and Combating Corruption			1	0	0	0	1	1
Partial Sum:				4	16	0	0	20	12

Elective Courses

6 Credit Hours

0222	Diversity Interaction			0	2	0	0	2	1
0422	Deep Ecology	111	Academic English Writing 1	1	0	0	0	1	1
0124	German Language 2	113	German Language1	0	2	0	0	2	1
0331	Nutrition			1	0	0	0	1	1
0244	Practicing Individual Presence			0	2	0	0	2	1
0155	Communication Skills			0	2	0	0	2	1
0255	Multi-Focus to Art			0	2	0	0	2	1
0260	Egyptology			1	0	0	0	1	1
0363	Research Methodology			0	2	0	0	2	1
0364	Sociology			1	0	0	0	1	1
0277	Consciousness Development			0	2	0	0	2	1
0381	Principles of Law			2	0	0	0	2	2
0383	Psychology			1	0	0	0	1	1
0484	Biology			1	0	0	0	1	1
0485	Evolution			1	0	0	0	1	1
0288	Art-Project			0	2	0	0	2	1
Partial Sum:				9	16	0	0	25	17

Summary of Course Contents For the University Requirements (Core Program)

0111 Academic English Writing 1 **لغة إنجليزية 1**

This course prepares students for advanced English reading and writing skills. Students read a wide variety of academic texts of easy to medium reading difficulty. Students practice reading skills such as pre-reading/surveying texts, adjusting their speed and reading style to different skimming and scanning requirements. They practice a variety of vocabulary skills such as using roots and affixes to understand the meaning of a word, using context clues to understand the approximate meaning of the word, and knowing when it is or is not necessary to look up a new word in the dictionary. Students learn how to write simple, compound and complex sentences and incorporate them into short paragraphs to form short essays.

0113 German Language 1 **لغة ألمانية 1**

This course focuses on basic linguistic and communicative structures of the German language. Students will be introduced to various aspects of German culture and learn to communicate in simple everyday situations and personal interaction. The module will adopt an integrated approach to language learning and will emphasize equally all four skills of reading, writing, listening and speaking as well as the acquisition of grammar structures and vocabulary. Audio and video materials will also be used to supplement the textbook and to provide students with a better insight into Germany, her culture and the life of her people. The module will also attempt to help students optimize their learning by teaching them vital strategies for language learning and language use. This should, in turn, allow students to develop greater learner autonomy.

0122 Academic English Writing 2 **لغة إنجليزية 2**

This course prepares students for college level reading and writing. Students practice reading more quickly with greater comprehension. Vocabulary work focuses on words in context. Students increase their critical reading skills, using various texts, fiction, magazines, poems, newspapers, and student writings and discuss and evaluate those materials. Students develop various academic skills such as writing summaries, paraphrases & reviews, taking essay exams and citing outside sources in writing.

0124 German Language 2 **لغة ألمانية 2**

This course allows students to manage their day-life in countries and regions where German is the first language, to get to know the country and people and to broaden their knowledge and skills in the German language. The main aim is speaking and practices of listening that lead to better understanding of the German language. In addition there will be a lot of information about culture and people. The course covers knowledge of modern German imparted through regular speaking exercises, talks and seminars. The main emphasis will be on communicative skills (speaking, writing, listening and reading). The course will also include theatre and regional knowledge projects and phonetic exercises. There will be daily practice in spoken German with added phonetics exercises; in addition, various projects will also be on offer.

0155 Communication Skills

مهارات التواصل

This course is designed to help students identify ways to communicate effectively in the workplace environment. Students will be introduced to Technical Writing in contrast to Academic Writing. Students will be taught how to communicate in business using a number of channels such as memos, e-mails, letters, reports, Meeting Minutes, oral presentations, fliers, brochures, newsletters and manuals. They will be introduced to concepts such as ethnocentrism, multiculturalism, etc. The course is designed to help students develop practical skills to communicate more effectively with emphasis on the importance of document design and graphics. Students will be instructed in the use of various techniques to write reader-friendly and visually appealing documents.

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0156 Creativity and Entrepreneurship

الإبداع والمبادرة

This course inspires entrepreneurial innovation and creativity through interactive lectures, workshops, and case studies in contemporary issues to include energy, life sciences, healthcare, and technology. Students will gain awareness of entrepreneurial innovation sources, structures and dynamics. Students will develop individual and group skills for generating innovative ideas and find ways to apply these ideas to address current issues and problems in different industries and settings. Course topics include the history of entrepreneurship, the role of entrepreneurs and entrepreneurs in the 21st century global economy, and the identification of entrepreneurial opportunities. The elements of creative problem-solving, the development of a business concept/model, the examination of feasibility studies, and the social/moral/ethical implications of entrepreneurship will be incorporated.

0157 Arabic Literature

آداب اللغة العربية

This course is a survey of Arabic literature history with a focus on continuity and change, influence, and major trends, themes, and genres. It provides students with a foundational knowledge of literature in the Arabic language. Students will be introduced to short stories, novels, essays, poetry, and plays. The focus will be on literature that is classical and modern, urban and rural, as well as religious and secular. This course explores social, religious, and historical aspects of modern Arab culture through an exciting collection of videos, lectures, reading and discussion. Contact between the Arab world and the west in the modern era will be seen in relation to changes in Arabic culture. Particular attention will be given to the works of Naguib Mahfouz, the Egyptian Winner of the Nobel Prize for Literature as well as to the works of Gibran Khalil Gibran, Lebanese-American philosophical essayist, novelist, mystical poet, and artist. The course will be taught in English in its entirety. No prerequisites.

0211 Perception Actuality

أدراك الواقع الفني

This course provides an introduction to the different basic arts: movement, music, acting and fine arts. Students learn the basic principles in each art to be able to appreciate the value of arts for their own personal growth as well as their communities development through engagement in the process of artistic creation. Practicing perception with all senses will be essential in this course and explored as a basic tool to develop awareness and mindfulness. In this course students are able to raise their inner activity in order to act with empathy.

0222 Diversity Interaction

التنوع التكاملي

This course will provide exercises to act and react with the uniqueness of polarities and investigate the interaction between different qualities. Students will explore the meaning of integration in an artistic way and get to know who to use diversity creatively and integrate it into their work. Students will engage in perceiving opposites and studying polarities to be inspired for finding the balance of tolerance, acceptance and practice their attitude of flexibility in changes.

0233 Communication Through Art

التواصل الفني

Musical conversation, communicating through painting, body language, expressing own ideas with the whole personality through movement are all ways of enhancing non-verbal communication skills. In this course the student can learn that communication through art can be the languages of human expression for a global understanding. Student can explore that imagination can be expressed more comprehensive than through words.

0244 Practicing Individual Presence

تجارب التواجد الفردي

Strengthening the individuals consciousness to respond and react according to a situation. Practicing time management and overview processes. Act with the right thing at the right moment. Be aware of the moment. Be aware of the consequences of your doing and develop social responsibility.

0255 Multi-Focus to Art

المنظور المتعدد للفنون

Essential in this course is to widen the students perspectives on multi diversity in the arts. To get to know various stiles of the arts leads to express one selves and interact out of different points of view. This develops an attitude to balance unequal modalities and respecting diversity and activate to bridge differences. Self observation and evaluation will lead to find the own authenticity.

0260 Egyptology

علم المصريات

The objective of this course is to help students acquire the necessary knowledge and understanding of ancient Egyptian culture/civilization in the ancient world. Topics in Egyptology shall introduce students to the following areas of study: History and archaeology of ancient Egypt, Middle Egyptian language and Hieroglyphic script, Egyptian art, Museum Studies, Egyptian epigraphy, Culture, Religion and beliefs, Egyptian foreign relations, Egyptian languages, Middle Kingdom literature, Ancient Languages, Egyptian art, Architecture, and Egyptian Town and Country

0266 Art Creative Processes

العمليات الفنية الأبداعية

Learning to accept and express processes gives the ability to act successfully. How can one deal with processes. This will be a main issue in this course. Exercises will be provided to strengthen the inner independency and trust in one selves creativity. The course offers a journey to find the own inner artist.

0269 Culture and History

الثقافة و التاريخ

This course covers definition; the differences between culture and civilization; culture and transfer of culture, types of culture, relativity of culture and importance of culture on the national and international levels. The course offers an overview on the national and international history with emphasis on the recent Egyptian history, role of ancient Egyptian civilization on the world civilization, the main characters of Christian era and the Islamic period, the role of Islamic institutions e.g. Azhar and Coptic Church on the national and international civilization, the stages of building democracy in Egypt, the role of Egyptian Leaders for dependence, new Egypt in science, technology, agriculture, education, industry, the role of youth in improving Egyptian education, industry, agriculture and culture.

0277 Consciousness Development

تنمية الوعي الفني

Practicing clarity for conscious action, simultaneous observation of manifold actions, increasing concentration for an ongoing process, mastering in synchronizing processes are the great challenges for management and leadership skills. The different art forms will provide the opportunity to experience knowledge of human nature, self knowledge and understanding processes in nature as fundamental skills to achieve a wider consciousness.

0288 Art-Project

مشروع فني

The student has the possibility to develop a project in one of the art forms with guided support of the artist. The student gets to know an artistic basis for abilities which are needed for a good and successful project management. Observing processes and evaluating them will be part of the learning process. The course should encourage the student to be aware for self reflection and self evaluation.

0331 Nutrition

This course focuses on teaching students about the basics of nutrition and healthy eating. Students are taught foundational concepts such as optimum caloric intake, core nutrients & vitamins needed for a healthy balanced lifestyle, etc. The course focuses on allowing students to understand how good nutrition can affect them and how to make good decisions for eating and living with a healthy lifestyle.

0363 Research Methodology

طرق وتصميم البحوث

This course provides students with an understanding of the purpose of research, research design, and research methods. Research is the application of the scientific method to solving real world problems; research design is the plan for the application of accepted practices; and research methods provides models for the appropriate collection, organization, and analysis of unbiased data for decision making, replication, and to contribute to the knowledge base.

0364 Sociology

علم الاجتماع

This course introduces students to basic concepts of sociology: groups, race and ethnicity, class, gender, nation, citizenship, status, role, society, human behavior patterns in groups, and social institutions. The approach is broadly comparative, historical, and global in orientation and focus, with an emphasis on the understanding of basic social processes such as socialization, social exchange, deviance and conformity, social change and basic social institutions such as the economy, the polity, the family, religion, education

0371 Philosophy

الفلسفة

This course provides a critical introduction to the fundamental philosophical problems. It includes an examination of historical and contemporary thought through in-class presentation, readings, discussions, and student writings. In this course, students will gain an understanding of diverse and often competing perspectives on basic human problems. Students will examine diverse viewpoints that will allow them to understand a wide range of views and challenge them to defend their own positions. This course involves active use of writing, speaking, and group projects. It provides opportunities for gathering information, analyzing problems, and synthesizing diverse perspectives. Finally, the course allows students to link theory to their own lives and daily practice.

0381 Principles of Law

مبادئ القانون

In this course, the Egyptian business law and codes are explained. Students are introduced to the concepts of laws that are on the books, norms, and certain illegal activities. The purpose of this course is for the students to achieve an understanding of their legal environment and be capable of working with the confines of the government's limits.

0382 Human Rights and Combating Corruption حقوق الإنسان و مكافحة الفساد

This course will be taught in line with the curricula set out and mandated by the Supreme Council of Universities. The course will focus on the principles of Human Rights in the Egyptian context and deal with some human rights problems and controversies such as economic and social rights, group rights, and cultural relativism. The course will also focus on corruption in different contexts as well as methods for fighting corruption on different levels.

0383 Psychology

علم النفس

This course provides an overview of the field of psychology, including research, theory, and application. Specific topics include the biological bases of behavior, sensation and perception, learning, cognition, motivation and emotion, development, social cognition and social influence, personality and individual differences, and mental disorders and therapy. A major goal of the course is to show how questions within these areas are addressed through experiential research. The course introduces students to theories, research, and procedures used in psychological research and practice. It also promotes thinking about how students can apply this knowledge to enhance their lives.

0411 Sustainable Development

مقدمة في التنمية المستدامة

The course is designed to raise the students awareness of the various socio-economic and technical issues involved in sustainable development, and to give a broad overview of the different areas of concern as expressed by practitioners. By the end of the course the students are expected to develop the specific capabilities to define the concept of sustainable development from a variety of perspectives to be able to explain how the idea of sustainability and development have changed through history and to apply sustainable development concepts to current environmental and development issues. The4 course further promotes an understanding of how individuals can influence sustainable development through the technical opportunities and challenges for change, and the mental approach needed. The course also explores the broad issues of sustainable development and the international agreements underpinning sustainable development and relates these to theories of globalization so as to awaken a broad knowledge of available technologies for moving to a sustainable future.

0422 Deep Ecology

علم البيئة

This course will review major ecological concepts, identify the techniques used by ecologists, provide an overview of local and global environmental issues, and examine individual, group and governmental activities important for protecting natural ecosystems. The course highlights the contributions of important ecologists and the historical development of the discipline in order to explore contemporary ecological issues in a modern context. It investigates solutions to modern ecological problems by applying ecological theory.

0484 Biology

علم الأحياء

This course introduces the students to the fundamental principles of biology, including cell structure, chemistry, and function; genetics; evolution; adaptation; and ecology. The course also highlights recent advances in the understanding of major principles in biology. In addition, the course offers a lab examination of the fundamental concepts in biology with emphasis on scientific inquiry through experimentation, dissection, and observation.

0485 Evolution

علم النشوء و الأرتقاء

This course introduces the students to the basic evolutionary concepts such as natural selection, the genetics of the evolutionary process, the genetics of populations, the origin of life on earth, the mechanisms of speciation, the impact of geologic forces on evolution, and human evolution.

Total Number of Courses: 28

Appendixes

Appendix No. 1

The University Scientific Departments

The University contains a number of unrepeated scientific departments. Each department offers and supervises a number of courses which are related to the scientific specialization of the department. The following list gives the no. of courses supervised by each department. The detailed list of these courses is given in the appendices. The scientific supervision of these courses is the responsibility of the department, whether the course is a part of an academic program inside or outside the faculty.

Faculty code	Department Code	Department Name	No. of Courses
1 Faculty of Engineering			
	10	Basic Sciences	12
	11	Electromechanics Engineering	25
	12	Mechatronics Engineering	23
	13	Civil Engineering	30
	14	Architecture Engineering	37
	No. of Departments: 5		No. of Courses: 127
2 Faculty of Business and Economics			
	21	Business Administration	56
	22	Economics	42
	No. of Departments: 2		No. of Courses: 98
3 Faculty of Pharmacy and Drug Technology			
	31	Pharmaceutical Chemistry	10
	32	Pharmacognosy and Medicinal Plants	11
	33	Pharmaceutics and Pharmaceutical Technology	15
	34	Pharmacology and Toxicology	9
	35	Biochemistry and Biotechnology	9
	36	Microbiology and Public Health	4
	37	Pharmacy Practice	22
	No. of Departments: 7		No. of Courses: 80
4 Faculty of Physical Therapy			
	41	Basic Science & Biomechanics	42
	42	Physical Therapy of Internal Medicine & Neurology	8
	43	Physical Therapy of Women's Health & Pediatrics	7
	44	Physical Therapy of Orthopedic & General Surgery	10
	No. of Departments: 4		No. of Courses: 67

Faculty code	Department Code	Department Name	No. of Courses
5 Faculty of Organic Agriculture			
	51	Organic Crop Production	39
	52	Food Processing Technology	31
	No. of Departments: 2		No. of Courses: 70
Total no. of Departments: 20		Total no. of Courses: 442	

Appendix No. 2

The University Academic Programs

General Regulations Heliopolis University

Fac. Code	Prog. Code	Academic Program Name	Man. Core Prog.	Elec. Core Prog.	Man. Faculty Req.	Elec. Faculty Req.	Man. Prog. Req.	Elec. Prog. Req.	Credit Hours	
1		Faculty of Engineering								كلية الهندسة
	1001	Energy Engineering	12	6	55	0	85	12	170	
	1002	Mechatronics Engineering	12	6	55	0	85	12	170	
	1003	Water Engineering	12	6	55	0	85	12	170	
	1004	Green Architecture Engineering	12	6	55	0	85	12	170	
Average:			12	6	55	0	85	12	170	
		4 Programs								
2		Faculty of Business and Economics								كلية إدارة الأعمال والاقتصاد
	2001	Business Administration	12	6	58	0	42	21	139	
	2002	Economics	12	6	58	0	42	21	139	
Average:			12	6	58	0	42	21	139	
		2 Programs								
3		Faculty of Pharmacy and Drug Technology								كلية الصيدلة وتكنولوجيا الدواء
	3001	Pharmacy and Drug Technology	12	6	0	0	153	9	180	
Average:			12	6	0	0	153	9	180	
		1 Programs								
4		Faculty of Physical Therapy								كلية العلاج الطبيعي
	4001	Physical Therapy	12	6	132	20	144	18	332	
Average:			12	6	132	20	144	18	332	
		1 Programs								
5		Faculty of Organic Agriculture								كلية الزراعة الحيوية
	5001	Organic Crop Production	12	6	30	18	59	15	140	
	5002	Food Processing Technology	12	6	30	18	59	15	140	
Average:			12	6	30	18	59	15	140	
		2 Programs								

Fac. Code	Prog. Code	Academic Program Name	Man. Core Prog.	Elec. Core Prog.	Man. Faculty Req.	Elec. Faculty Req.	Man. Prog. Req.	Elec. Prog. Req.	Credit Hours
General Average:			12	6	52.8	5.6	83.9	14.7	175

Statistics:

Total no. of academic programs in the University:	10
Average percentage of the University requirements to the total credits:	10.29%
Average percentage of the Faculty requirements to the total credits:	33.37%
Average percentage of the Program requirements to the total credits:	56.34%
Average percentage of the Mandatory credits to the total credits:	84.97%
Average percentage of the Elective credits to the total credits:	15.03%

Appendix 7

Faculty of Organic Agriculture Curriculum

- 1st Faculty strategy
- 2nd Graduate occupational profile
- 3rd Academic Reference Standards (ARS)
- 4th Study plan general outline
- 5th Academic programs
- 6th Scientific departments
- 7th Faculty requirements
- 8th Curricula of the academic programs
- 9th Summary of course specs.

Introduction

The Faculty of Organic Agriculture (FOA) of Heliopolis University for Sustainable Development (HUSD) is established to contribute to the Sustainable Development of the Egyptian Society. The Faculty was created with in 2018 and was approved alongside the university according to the Ministerial Decree No. 3194 for the year 2012. The Faculty of Organic Agriculture combines 2 programs and a research unit.

1st Faculty Strategy

Vision

In line with the vision of Heliopolis University and the pillars of sustainable development, the Faculty of Organic Agriculture strives to be among the leading institutions in teaching, learning, research in the field of organic agriculture to serve the Egyptian community.

Mission

In line with the mission of Heliopolis University, the Faculty of Organic Agriculture provides academic degrees which qualify graduates to work in the different fields of organic agriculture both nationally and internationally and develops the graduates' entrepreneurial abilities to achieve new innovations in the field.

Goals

The Faculty of Organic Agriculture is dedicated to achieving the following goals provide the society with:

1. Graduates with competent abilities in methods of analysis involving use of mathematics, fundamental physical and biological sciences, engineering sciences, and in computational skills needed for their future practice of organic agriculture.
2. Graduates with the necessary skills to think creatively, to formulate problem statements, to communicate effectively, synthesize information, work collaboratively, answer questions through experimentation and to evaluate and implement problem solutions.
3. Graduates capable of addressing issues of ethics, safety, professionalism, cultural diversity, globalization, environmental impact, and social and economic impact in organic practice.
4. Professional and personal growth, graduates prepared for successful careers, and continuous

Strategic Objectives

Over the next five years, the Faculty of Organic Agriculture aims to achieve the following:

1. Build up and develop a strong faculty team that understands the vision and mission and its practical implications.
2. Build up strong partnerships to private, public and civil stakeholders in order to engage in joint research-to-innovation projects.
3. Create a name of for the FOA that is known across Egypt for being an innovative faculty to offers one of the best degrees in Egypt.
4. Engage in a regular and open dialogue with the other faculty and core program members within Heliopolis University to create links between the different contents of courses and research projects.
5. Experiment with new forms of research and knowledge creation methodologies such as action research in general, appreciative and co-operative inquiry.
6. Building up the faculty departments in terms of knowledge base and increase the number of offered courses.
7. Continuously develop and improve curricula within the frame of bylaws accepted by the Egyptian Ministry of Higher Education.
8. Achieve program Accreditation.
9. Develop a competitive and unique post-graduate program for both professional and academic
10. Increasing the publication rate of the faculty to increase international recognition and help in the accreditation process.

2nd Graduate Occupational Profile

1. Graduate Occupational Profile of the Faculty

1.1. Graduates of the Faculty of Organic Agriculture must be able to:

- 1.1.1. Recognize the role of agriculture in the society
- 1.1.2. Manage and utilize agricultural resources appropriately.
- 1.1.3. Participate in managing agricultural businesses
- 1.1.4. Display appropriate professional commitment and attitudes.
- 1.1.5. Conserve natural resources and maintain bio-diversity.
- 1.1.6. Demonstrate awareness of relevant legal, ethical, and socio-economic issues.
- 1.1.7. Be prepared for self-management and continuous learning.
- 1.1.8. Be prepared to engage in research studies.

2. Graduate Occupational Profile of the Organic Crop Production Program

1.2. Graduates of Organic Crop Production must be able to

- 1.2.1. Suggest plans of cultivation based on soil and water types and quality.
- 1.2.2. Use water and soil resources efficiently
- 1.2.3. Practice agriculture under different production and ecological systems.
- 1.2.4. Minimize post-harvest loss.
- 1.2.5. Identify, assess, and solve bio-fertilizer related problems
- 1.2.6. Operate the ecological techniques and technologies used in preserving and conserving soil fertility
- 1.2.7. Design, implement, monitor, evaluate, recommend and document modifications in organic farming to insure effective, safe and economic management
- 1.2.8. Practice composting and biomass recycling; and design the farm waste management plan and specify its likely environmental impact .

- 1.2.9. Manage the organic farm without violation of the applicable standards regulation or guidelines .
- 1.2.10. Operate an independent project work
- 1.2.11. Select the right decision (self-management)
- 1.2.12. Apply IT skills and technological advancement in practice .
- 1.2.13. Retrieve, evaluate and manage professional information and literature
- 1.2.14. Able to work in group.
- 1.2.15. Develop agricultural practical expertise skills related to practices and techniques of organic agriculture production and management.

3. Graduate Occupational Profile of the Food Processing Technology Program

1.3. Graduates of the Food Processing Technology program must be able to

- 1.3.1. Process different food (traditional, organic and related products).
- 1.3.2. Apply quality control and food safety standards.
- 1.3.3. Use the up-dated methods to evaluate food and related products
- 1.3.4. Recognize the appropriate storage conditions for control food deterioration and spoilage
- 1.3.5. Follow up instrumentation calibration plan, maintenance plan and inspection
- 1.3.6. Follow up supply chain design and human resources
- 1.3.7. Recognize environmental control engineering
- 1.3.8. Recognize industrial service and lean production

3rd Academic Reference Standards (ARS)

1. Knowledge and Understanding

1.1. Graduates of the Faculty of Organic Agriculture must have gained an understanding of the following definitions and concepts:

- 1.1.1. The basic and applied sciences related to agriculture
- 1.1.2. The terminologies in agriculture used in farming areas
- 1.1.3. Methods of handling and recycling agricultural wastes in a sustainable and environmentally friendly way
- 1.1.4. Basics of planning for agricultural businesses
- 1.1.5. Scio-economic aspects related to sustainable agriculture
- 1.1.6. Bio-safety regulations and practices in agriculture
- 1.1.7. Concepts of bio-diversity and maintaining natural resources
- 1.1.8. Organic standards & accreditation bodies
- 1.1.9. Basics agricultural economics and the agricultural supply chain

1.2. Along with the Knowledge and Understanding of the Faculty, graduates of Organic Crop Production must have gained an understanding of the following definitions and concepts:

- 1.2.1. Morphology, anatomy and histology of kingdom planta
- 1.2.2. Requirements for optimal growth and production of major crops using organic methods
- 1.2.3. Crop production systems in relation to ecological matrices
- 1.2.4. Sustainable soil management and practice of soil conservation and maintenance
- 1.2.5. Principles of using bio-fertilizers and organic fertilizer requirements of major crops
- 1.2.6. Water requirement of major crops and irrigation drainage systems
- 1.2.7. Principles of agriculture machinery and applications in agricultural practices
- 1.2.8. Basics of weed and pest control and plant pathogens

1.2.9. Pre and post-harvest good practices for different crops.

1.3. Along with Knowledge and Understanding of the faculty, graduates of the Organic Crop Production Program must acquire the following skills:

1.3.1. Selecting the right decision (self-management)

1.3.2. Retrieve, evaluate, and manage professional information and literature

1.3.3. Identify, assess and solve bio-fertilizer related problems

1.3.4. Identify ecological techniques and technologies used in preserving and conserving soil fertility

1.3.5. Understand the implementation of organic production

1.3.6. Specify preparation of composting process

1.3.7. Identify Organic Crop Production

1.4. Along with the Knowledge and Understanding of the Faculty, graduates of the Food Processing Technology Program must acquire the following skills:

1.4.1. Identify physical properties and reaction of food components and how to control these reactions.

1.4.2. Identify storage problems and affiliated causes in processing technology

1.4.3. Select appropriate packaging for processed food

1.4.4. Operate basic food processing equipment

1.4.5. Apply good manufacture practices (GMP).

1.4.6. Monitor sanitary and safe food delivery and transportation System

1.4.7. Implement the principles of food processing and preservation methods

1.4.8. Control deterioration and spoilage of raw materials and processed food.

1.4.9. Detect food adulteration.

1.4.10. Apply quality control standards and assure food safety

- 1.4.11. Recognize the different types of chemical processes
- 1.4.12. Recognize thermodynamics and heat transfer
- 1.4.13. Recognize industrial services

2. Practical and Professional Skills

2.1. Graduates of the Faculty of Organic Agriculture must have gained the following practical and professional skills:

- 2.1.1. Apply good practices in agriculture that increase and improve agro-products
- 2.1.2. Produce safe food and fiber considering environmental issues
- 2.1.3. Use of agricultural resources for sustainable agriculture
- 2.1.4. Plan according to changes in national and international economics
- 2.1.5. Perform agricultural extension plans and programs
- 2.1.6. Plan and conduct an independent investigation of compliance with organic standards with limited guidance.
- 2.1.7. Observe, collect, and analyze data to solve agriculture problems
- 2.1.8. Design and conduct agricultural experiments and draw conclusions
- 2.1.9. Integrate some lines of evidence to elucidate phenomenon and assess risks
- 2.1.10. Choose the best among alternatives to maximize benefits

2.2. Along with the Practical & Professional Skills of the Faculty, graduates of Organic Crop Production must acquire the following skills:

- 2.2.1. Grow and propagate major crops in accordance with
- 2.2.2. Calculate and apply appropriate bio-fertilizers
- 2.2.3. Calculate water requirements for certain crop and apply appropriate irrigation system
- 2.2.4. Apply biological control methods for pest and disease management of crops
- 2.2.5. Harvest major crops appropriately

- 2.2.6. Manage post-harvest processes of major crops
 - 2.2.7. Identify key fungal, viral, and bacterial problems, to assess risks and suggest the appropriate biological control methods
 - 2.2.8. Select and breed high quality crops
 - 2.2.9. Use tissue culture for vegetative propagation
 - 2.2.10. Design an appropriate crop rotation for fields & greenhouses
 - 2.2.11. Calculate cost of production for specific crops
 - 2.2.12. Practice integrated pest management
 - 2.2.13. Select appropriate crops relative to ecological matrix, water and soil quality
 - 2.2.14. Use appropriate agro-machines
 - 2.2.15. Apply general field & greenhouse agricultural practices
 - 2.2.16. Operate the ecological techniques and technologies used in preserving and conserving soil fertility
 - 2.2.17. Design, implement, monitor, evaluate, recommend and document modifications in organic farming to insure effective, safe and economic management
 - 2.2.18. Practice composting and biomass recycling
 - 2.2.19. Design the farm waste management plan and specify its likely environmental impact
 - 2.2.20. Operate an independent agriculture project
- 2.3. Along with the Practical & Professional Skills of the Faculty, Graduates of Food Processing Technology must acquire the following skills:**
- 2.3.1. Analyze food physically, chemically and microbiologically
 - 2.3.2. Identify storage problems and affiliated causes in processing technology
 - 2.3.3. Select appropriate packaging for processed food
 - 2.3.4. Operate basic food processing equipment
 - 2.3.5. Apply good manufacture practices (GMP)

- 2.3.6. Monitor sanitary food delivery and transportation system
- 2.3.7. Implement the principles of food processing and preservation methods
- 2.3.8. Control deterioration and spoilage of raw materials and processed food.
- 2.3.9. Detect food adulteration.
- 2.3.10. Apply quality control standards and assure food Safety
- 2.3.11. Process traditional and organic foods
- 2.3.12. Grade/evaluate meat and fish products.
- 2.3.13. Process cereal grains.
- 2.3.14. Formulate daily dietetic requirements
- 2.3.15. Process edible oils, vegetables, fruits Sweeteners, brewing products and oil products.
- 2.3.16. Process vegetables and fruits
- 2.3.17. Process sweeteners and brewing products
- 2.3.18. Follow up instrumentation calibration plan and maintenance plan and inspection
- 2.3.19. Test for industrial services and lean production system

3. Intellectual Skills

3.1. Graduates of the Faculty of Organic Agriculture must be able to:

- 3.1.1. Observe, collect, and analyze data to solve agricultural problem.
- 3.1.2. Design and conduct experiments and draw conclusions.
- 3.1.3. Integrate some lines of evidence to elucidate phenomenon and assess risks.
- 3.1.4. Choose the best among alternatives to maximize benefits.
- 3.1.5. Analyze and compare the differences between traditional and organic agriculture

3.2. Along with the Intellectual Skills of the Faculty, Graduates of Organic Crop Production must acquire the following Intellectual Skills:

- 3.2.1. Suggest plans for commercial plant production
 - 3.2.2. Analyze and evaluate farm activities and plan accordingly
 - 3.2.3. Describe soil properties.
 - 3.2.4. Discuss and evaluate the factors influencing consumer demand for organically produced food.
 - 3.2.5. Classify the principles of environmental accounting for gains and losses of different cultivation options.
 - 3.2.6. Analyze socio-economic and market strategies for organic agriculture.
 - 3.2.7. Formulate constraints and opportunities for the conversion, development and optimization of organic farm businesses.
 - 3.2.8. Manage the organic farm without violation of the applicable standards regulation or guidelines .
 - 3.2.9. Select the right decision (self-management)
 - 3.2.10. Retrieve, evaluate and manage professional information and literature
 - 3.2.11. Develop agricultural practical expertise skills related to practices and techniques of Organic Crop Production and management.
 - 3.2.12. Audit organic farms
- 3.3. Along with the Intellectual Skills of the Faculty, graduates of Food Processing Technology must acquire the following skills:**
- 3.3.1. Apply mathematical and statistical principles to food industry
 - 3.3.2. Identify and solve basic processing problems
 - 3.3.3. Explain different technologies and tools used in Food Processing
 - 3.3.4. Design a sustainable food processing system for different agricultural products
 - 3.3.5. Identify state-of-the-art tools and technology for food processing
 - 3.3.6. Compare different processing techniques and technologies

4. General & Transferable Skills

4.1. Graduates of the Faculty must have gained the following general & transferable skills:

- 4.1.1. Effective time management.
- 4.1.2. Effective communication skills.
- 4.1.3. Using team work to achieve greater results and benefit from diverse viewpoints and backgrounds.
- 4.1.4. Cognitive and intellectual development and continuous self-learning.
- 4.1.5. Using problem solving techniques at the individual or institutional level with high efficiency.
- 4.1.6. Presentation and dialogue.
- 4.1.7. Self-management and dealing with work pressures.
- 4.1.8. Innovation, development, and continuous improvement of work.
- 4.1.9. Use of technical terms relevant to the themes of the program.
- 4.1.10. Familiarity with a foreign language that is widespread.
- 4.1.11. Use of computers and information technology.
- 4.1.12. Prepare reports in a scientific, professional, and ethical manner.
- 4.1.13. Show satisfactory English language
- 4.1.14. Use software packages in variety of agricultural activities
- 4.1.15. Use information technology for trade and communication
- 4.1.16. Use appropriate audiovisual aids in a presentation
- 4.1.17. Present information and interpret phenomena verbally by report writing

4th Study Plan General Outline

The programs of the Faculty of Organic Agriculture are 4-year programs with 140 Credit Hours Each. The 140 Credit Hours are divided into University Requirement Courses, Faculty Requirement Courses, Academic Program Requirements, Academic Program Electives, Academic Minor Program, one internships, and a Graduation Project. Their distribution are as follows:

The general study plan for the Organic Crop Production program outline is as follows:

Subject	Credit Hrs.	Percentage	NARS (Agriculture)
Basic Sciences	37	26%	30 – 35%
Social and Humanities Sciences	18	13%	5 – 12%
Core Sciences	53	38%	40 – 45%
Field Training & Projects	14	10%	5 – 7%
Discretionary Subjects	18	13%	7 – 8%
Total	140	100%	100%

The general study plan for the Food Processing Technology program outline is as follows:

Subject	Credit Hrs.	Percentage	NARS (Agriculture)
Basic Sciences	36	26%	30 – 35%
Social and Humanities Sciences	18	13%	5 – 12%
Core Sciences	62	44%	40 – 45%
Field Training & Projects	6	4%	5 – 7%
Discretionary Subjects	18	13%	7 – 8%
Total	140	100%	100%

5th Academic Programs and Scientific Departments

The Faculty of Organic Agriculture comprises 2 academic programs. Each program study plan is a 4-year program and contains 140 credit hours. Through the academic advising process, students learn to take responsibility for selecting and transferring into their chosen major and minor, registering in courses and setting goals as well as planning the steps to implement them.

The following table indicates the distribution of the credit hours for all academic programs. In order for a student to graduate with a degree in either Organic Crop Production or Food Processing Technology, they must complete all 18 CrHrs of University Requirements, all 30 CrHrs of Faculty Requirements in addition to the 59 CrHrs of Program Requirements and 15 CrHrs of Program Electives of their respective program. Additionally, it is required of students in the Faculty of Organic Agriculture to take at least 1 minor from a different academic program offered by any of the faculties in the university which requires 18 CrHrs which includes a minor in business administration, a minor in economics, & a minor in climate change. The academic program is indicated in the following table:

Requirements	Maj/Min	Man/Elec.	Type	Credits
University Requirements (18 credit hours)		Mandatory	Courses	12
		Elective	Courses	6
Faculty Requirements (30 credit hours)		Mandatory	Courses	30
Academic Program Requirements (74 credit hours)		Mandatory	Courses, Internships, & Graduation Project	59
		Elective	Courses	15
Academic Minor Requirements (18 credit hours)			Courses	18
Total credit hours for each academic program:				140

The Faculty offers a *Bachelor of Science (B.Sc.)* in the following specializations:

1. Organic Crop Production

2. Food Processing Technology

New academic programs may be established based on the recommendations of the Faculty council and the approval of Heliopolis University council and the board of trustees.

The Faculty of Organic Agriculture has 2 Departments:

1. Organic Crop Production
2. Food Processing Technology

Students may elect to retake courses as per Article 49 of the University Internal Bylaws. However, retaking courses may be subject to approval by the faculty if the student is retaking the course to improve his overall academic standing, ending his/her period of probation/academic warning, or if there is other justifiable reason (conditional improvement). Repeat courses are also subject to the conditions set out in Article 49 of the University Internal Bylaws.

1 The Department of Organic Crop Production

The Department of Organic Crop Production is primarily focused on the aspects of agriculture, food production, crops, etc. within the Faculty of Organic Agriculture. The department is focused on using state of the art methods in organic crop production and following international standards for organic products in order to educate students on ways to grow and cultivate different crops in a way that preserves the health of both the people and the environment. Members of the faculty are responsible for teaching courses such as Principles of Organic Agriculture, Plant Nutrition, Food Safety, etc.. The department is responsible for choosing the most appropriate courses, setting the study plan, creating course descriptions, making adjustments, and sending recommendations to the Dean of the Faculty for enhancing the academic program and making amendments to the bylaws related to this program upon necessity.

2 The Department of Food Processing Technology

The Department of Food Processing Technology is primarily focused on the aspects of food processing, storage, and supply chains within the Faculty of Organic Agriculture. The department is focused on using state of the art methods in Food Processing Technology and following international standards for food safety, food handling, & processing in order to educate students on ways to grow and cultivate different crops in a way that preserves the health of both the people and the environment. Members of the faculty are responsible for teaching courses such as Food Preservation & Biodeterioration, Food Chemistry & Analysis, Food Packaging & Shelf Life, etc. The department is responsible for choosing the most appropriate courses, setting the study plan, creating course descriptions, making adjustments, and sending

recommendations to the Dean of the Faculty for enhancing the academic program and making amendments to the bylaws related to this program upon necessity.

Grades & Evaluation

The grades of the students will be distributed according to Article 39 of the University Internal Bylaw. However, the actual percentage grade of the students received on each course will be reflected on the student's Academic Transcript according to the regulations of the equivalent faculties.

6. Scientific Departments Courses in the Faculty of Organic Agriculture

Each department in the faculty scientifically supervises a group of courses that belong to its field of specialization. The department is responsible to develop the course specs and follow up the reports and files of these courses.

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51 Department of Organic Crop Production

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Lab.	Sum	Credit Hours
5101	<i>Plant Nutrition</i>	2	2	4	3
5102	<i>Principles of Organic Agriculture</i>	2	0	2	2
5111	<i>Principles of Organic Horticulture</i>	2	2	4	3
5112	<i>Sustainable Irrigation Management</i>	2	0	2	2
5113	<i>Comparative Biology 1</i>	2	2	4	3
5114	<i>Agricultural Biochemistry</i>	2	2	4	3
5121	<i>Post-Harvest Technology</i>	2	2	4	3
5122	<i>Soil Microbiology</i>	2	2	4	3
5123	<i>Ecology & Agro-Ecosystems</i>	3	0	3	3
5124	<i>Organic Crop Production & Management</i>	2	2	4	3
5131	<i>Organic Vegetable Production</i>	2	2	4	3
5135	<i>Plant Pathology & Entomology</i>	2	2	4	3
5141	<i>Applied Environmental Management</i>	2	0	4	3
5142	<i>Biological Control</i>	2	2	4	3
5143	<i>Production of Industrial Crops</i>	2	2	4	3
5144	<i>Comparative Biology 2</i>	2	2	4	3
5145	<i>Soil Fertility Management</i>	2	2	4	3
5150	<i>Organic Livestock Husbandry</i>	2	2	4	3
5151	<i>Technical Farm Planning</i>	2	0	2	2
5152	<i>Agricultural Engineering</i>	2	2	4	3
5153	<i>Rural Sociology</i>	3	0	3	3
5155	<i>Food Safety</i>	2	2	4	3
5158	<i>Research Methodology & Experiment Design</i>	1	2	3	2
5161	<i>Organic Standards & Accreditation</i>	2	0	2	2
5162	<i>Bio-Remediation</i>	2	2	4	3
5164	<i>Organic Plant Breeding & Seed Production</i>	2	2	4	3
5165	<i>Biofertilizers</i>	2	2	4	3
5166	<i>Biostatistics</i>	2	0	4	3
5167	<i>Agricultural Supply Chain Management</i>	2	0	2	2
5173	<i>Organic Medicinal & Aromatic Herbs</i>	2	2	4	3
5174	<i>Organic Pest & Disease Management</i>	2	2	4	3
5175	<i>Agricultural Biotechnology</i>	2	2	4	3
5176	<i>Agricultural Nanotechnology</i>	2	0	2	2

5177	Organic Fruit Production	2	2	4	3	
5178	ICT for Crop Production	2	2	4	3	
5179	Ethics in Agriculture & Food Processing	2	0	2	2	
5181	Sustainable Rural Development	3	0	3	3	
5188	Organic Crop Production Internship	0	0	30	10	
5189	Organic Crop Production Graduation Project	1	6	7	4	
No. of Courses in the Department:	39	Partial Sum:	77	56	167	117

52 Department of Food Processing Technology

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Lab.	Sum	Credit Hours	
5201	Food Preservation & Biodeterioration	2	2	4	3	
5211	Food Engineering	2	2	4	3	
5212	Food Packaging & Storage Technology	2	0	2	2	
5221	Human Nutrition	2	0	2	2	
5222	Physical Properties & Sensory Evaluation	2	2	4	3	
5223	Sustainable Food Waste Management	2	0	2	2	
5224	Food Chemistry & Analysis	2	2	4	3	
5231	Food Microbiology & Fermentation Technology	2	2	4	3	
5232	Processing Meat & Poultry	2	2	4	3	
5241	Industrial Services & Machine Maintenance	2	0	2	2	
5242	Cereal Technology	2	2	4	3	
5251	Processing Fruits & Vegetables	2	2	4	3	
5254	Disease & Pest Control in Food Processing	2	2	4	3	
5261	Dairy Processing	2	2	4	3	
5262	Fundamentals of Food Biotechnology	2	2	4	3	
5264	Food Safety and Food Laws	2	0	2	2	
5265	Food Additives & Fortification Technology	2	2	4	3	
5266	Flavor Technology	2	2	4	3	
5269	Food Processing Technology Internship 1	0	0	3	1	
5271	Oils & Fats Technology	2	2	4	3	
5272	Quality Assurance & Hazard Analysis	2	0	2	2	
5273	Processing Sugars & Special Products	2	2	4	3	
5274	Halal Assurance Systems	2	2	4	3	
5275	Canning Technology	2	2	4	3	
5276	Functional Foods	2	2	4	3	
5278	ICT for Food Processing	2	2	4	3	
5281	Food Product Development	2	0	2	2	
5281	Chemical & Environmental Engineering	2	2	4	3	
5282	Technology Risk Management	2	0	2	2	
5288	Food Processing Technology Internship 2	0	0	3	1	
5289	Food Processing Technology Graduation Project	1	6	7	4	
No. of Courses in the Department:	31	Partial Sum:	57	46	109	82
No. of Courses in the Faculty:	70	Total:	134	102	276	199

7.

Faculty of Organic Agriculture Requirements

The faculty requirements study plan contains mandatory courses. These courses represent the essential and general scientific background for all students in the faculty to help them choose the suitable academic program. The following are the data of the faculty requirements courses.

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
Mandatory Courses			30 Credit Hours						
3100	General and Physical Chemistry			2	0	2	0	4	3
3101	Organic Chemistry 1			3	0	2	0	5	4
1001	General Physics 1			2	1	1	0	4	3
5102	Principles of Organic Agriculture			2	0	0	0	2	2
5113	Comparative Biology 1			2	0	2	0	4	3
2213	Mathematics 1			2	2	0	0	4	3
5114	Agricultural Biochemistry	3101	Organic Chemistry 1	2	0	2	0	4	3
2114	Computer Skills			0	2	0	0	2	1
5121	Post-Harvest Technology			2	0	2	0	4	3
2224	Statistics 1	2213	Mathematics 1	2	2	0	0	4	3
5158	Research Methodology & Experiment Design			1	0	2	0	3	2
Subtotal:				20	7	13	0	40	30

8. Study Plans For The Academic Programs of Faculty of Organic Agriculture

The Programs of Organic Crop Production and Organic Food Processing Technology study plans contain mandatory courses and elective courses. These courses represent the essential and general scientific background for students within the different scientific programs. In addition to the 30 Faculty Requirement Credit Hours and 18 University Requirement Study hours. Students are required to complete 59 Credit Hours of Mandatory Courses and 15 Credit Hours of Elective Courses. The mandatory courses include the Internships and Graduation Projects required for students to take before graduation. In addition to this, students are also required to take 18 credit hours of a minor of their choice available from the other faculties in the university. The current minors available are a Minor in Business Administration, Minor in Economics, a Minor in Climate Change. Other Minors may become available from the other faculties and be offered to the Students of the Organic Agriculture Programs.

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5001 Organic Crop Production

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
Mandatory Courses				59 Credit Hours					
5101	Plant Nutrition			2	0	2	0	4	3
5111	Principles of Organic Horticulture	5102	Principles of Organic Agriculture	2	0	2	0	4	3
5112	Sustainable Irrigation Management			2	0	0	0	2	2
5122	Soil Microbiology	5113	Comparative Biology 1	2	0	2	0	4	3
5124	Organic Crop Production & Management	5102	Principles of Organic Agriculture	2	0	2	0	4	3
5131	Organic Vegetable Production	5111	Principles of Organic Horticulture	2	0	2	0	4	3
5135	Plant Pathology & Entomology	5113	Comparative Biology 1	2	0	2	0	4	3
5142	Biological Control	5135	Plant Pathology & Entomology	2	0	2	0	4	3
5145	Soil Fertility Management	5122	Soil Microbiology	2	0	2	0	4	3
5150	Organic Livestock Husbandry	5102	Principles of Organic Agriculture	2	0	2	0	4	3
5151	Technical Farm Planning	5102	Principles of Organic Agriculture	2	0	0	0	2	2
5153	Rural Sociology			3	0	0	0	3	3

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5161	Organic Standards & Accreditation	5102	Principles of Organic Agriculture	2	0	0	0	2	2
1364	Plant Water Relationship in Soil			2	2	0	0	4	3
5164	Organic Plant Breeding & Seed Production	5124	Organic Crop Production &	2	0	2	0	4	3
1378	Design and Implementation of Irrigation Systems	1364	Plant Water Relationship in Soil	2	1	1	0	4	3
5188	Organic Crop Production Internship			0	0	0	30	30	10
5189	Organic Crop Production Graduation Project			1	0	6	0	7	4
Partial Sum:				34	3	27	30	94	59

Elective Courses

15 Credit Hours

3200	Botany & Pharmacognosy			2	0	2	0	4	3
5221	Human Nutrition			2	0	0	0	2	2
5123	Ecology & Agro-Ecosystems			3	0	0	0	3	3
1333	Hydrology 1			2	1	1	0	4	3
2234	Statistics 2	2224	Statistics 1	2	2	0	0	4	3
5141	Applied Environmental Management	5123	Ecology & Agro-Ecosystems	2	2	0	0	4	3
5143	Production of Industrial Crops			2	0	2	0	4	3
5144	Comparative Biology 2	5113	Comparative Biology 1	2	0	2	0	4	3
5152	Agricultural Engineering			2	0	2	0	4	3
5155	Food Safety	5145	Soil Fertility Management	2	0	2	0	4	3
5162	Bio-Remediation			2	0	2	0	4	3
5262	Fundamentals of Food Biotechnology			2	0	2	0	4	3
5264	Food Safety and Food Laws			2	0	0	0	2	2
5165	Biofertilizers	5145	Soil Fertility Management	2	0	2	0	4	3
5166	Biostatistics	2234	Statistics 2	2	2	0	0	4	3
5167	Agricultural Supply Chain Management			2	0	0	0	2	2
5173	Organic Medicinal & Aromatic Herbs	5111	Principles of Organic Horticulture	2	0	2	0	4	3

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5174	Organic Pest & Disease Management	5144	Comparative Biology 2	2	0	2	0	4	3
5175	Agricultural Biotechnology			2	0	2	0	4	3
5176	Agricultural Nanotechnology			2	0	0	0	2	2
5177	Organic Fruit Production	5111	Principles of Organic Horticulture	2	0	2	0	4	3
5178	ICT for Crop Production	2114	Computer Skills	2	0	2	0	4	3
5179	Ethics in Agriculture & Food Processing			2	0	0	0	2	2
5181	Sustainable Rural Development	5153	Rural Sociology	3	0	0	0	3	3
Partial Sum:				50	7	27	0	84	67

5002 Food Processing Technology

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
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Mandatory Courses

59 Credit Hours

5201	Food Preservation & Biodeterioration			2	0	2	0	4	3
5211	Food Engineering	1001	General Physics 1	2	0	2	0	4	3
5212	Food Packaging & Storage Technology	5201	Food Preservation & Biodeterioration	2	0	0	0	2	2
5223	Sustainable Food Waste Management			2	0	0	0	2	2
5224	Food Chemistry & Analysis	3112	Analytical Chemistry 1	2	0	2	0	4	3
5231	Food Microbiology & Fermentation Technology	5113	Comparative Biology 1	2	0	2	0	4	3
5232	Processing Meat & Poultry	5211	Food Engineering	2	0	2	0	4	3
1133	Thermodynamics	1001	General Physics 1	2	1	1	0	4	3
5241	Industrial Services & Machine Maintenance	1133	Thermodynamics	2	0	0	0	2	2
5242	Cereal Technology	5211	Food Engineering	2	0	2	0	4	3
5251	Processing Fruits & Vegetables	5211	Food Engineering	2	0	2	0	4	3
5254	Disease & Pest Control in Food Processing	5113	Comparative Biology 1	2	0	2	0	4	3
5161	Organic Standards & Accreditation	5102	Principles of Organic Agriculture	2	0	0	0	2	2

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5264	Food Safety and Food Laws			2	0	0	0	2	2
5265	Food Additives & Fortification Technology			2	0	2	0	4	3
5269	Food Processing Technology Internship 1			0	0	0	3	3	1
5271	Oils & Fats Technology	5211	Food Engineering	2	0	2	0	4	3
5272	Quality Assurance & Hazard Analysis			2	0	0	0	2	2
5273	Processing Sugars & Special Products			2	0	2	0	4	3
5276	Functional Foods			2	0	2	0	4	3
5281	Food Product Development	5211	Food Engineering	2	0	0	0	2	2
5288	Food Processing Technology Internship 2			0	0	0	3	3	1
5289	Food Processing Technology Graduation Project			1	0	6	0	7	4
Partial Sum:				41	1	31	6	79	59

Elective Courses

15 Credit Hours

1011	General Physics 2	1001	General Physics 1	2	1	1	0	4	3
3112	Analytical Chemistry 1	3100	General and Physical Chemistry	2	0	2	0	4	3
5221	Human Nutrition			2	0	0	0	2	2
5121	Post-Harvest Technology			2	0	2	0	4	3
1122	Electrical Engineering	1011	General Physics 2	2	2	0	0	4	3
5222	Physical Properties & Sensory Evaluation			2	0	2	0	4	3
1134	Modelling and Simulation			2	0	2	0	4	3
2234	Statistics 2	2224	Statistics 1	2	2	0	0	4	3
5261	Dairy Processing	5211	Food Engineering	2	0	2	0	4	3
5262	Fundamentals of Food Biotechnology			2	0	2	0	4	3
5266	Flavor Technology			2	0	2	0	4	3
5167	Agricultural Supply Chain Management			2	0	0	0	2	2
5274	Halal Assurance Systems			2	0	2	0	4	3

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5275	Canning Technology	5212	Food Packaging & Storage Technology	2	0	2	0	4	3
1377	Introduction to Instrumentation & Process Control			2	2	0	0	4	3
5278	ICT for Food Processing	2114	Computer Skills	2	0	2	0	4	3
5179	Ethics in Agriculture & Food Processing			2	0	0	0	2	2
5281	Chemical & Environmental Engineering	3112	Analytical Chemistry 1	2	0	2	0	4	3
5282	Technology Risk Management			2	0	0	0	2	2
Partial Sum:				38	7	23	0	68	53

Total: **163** **18** **108** **36** **325** **238**

Statistics:

The percentage of the lecture hours to the total contact hours:	50.2%
The percentage of the tutorial hours to the total contact hours:	5.5%
The percentage of the laboratory hours to the total contact hours:	33.2%
The percentage of the workshop hours to the total contact hours:	11.1%

8. Summary of Course Contents For the Faculty of Organic Agriculture

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1001 General Physics 1

This course introduces the students to the field of gravitational force, fluid statics and dynamics, viscosity, elasticity, heat and temperature, first law of thermodynamics, heat engines, entropy, second law of thermodynamics, gas theory, sound waves, waves in elastic media, experiments: simple pendulum, complex pendulum, liquid viscosity, liquid surface tension, coefficient of heat conduction and specific heat.

1377 Introduction to Instrumentation & Process Control

This course introduces students to the principles of automatic control and instrumentation. In this course, students are exposed to process control systems, sensing systems, and integrating systems. Students are also exposed to dynamic states of processes as well as methods of controlling and handling such systems.

1378 Design and Implementation of Irrigation Systems

Students in this course will be taught about the design and implementation of different irrigation systems for different kinds of crops and soil. Students will learn how to study the conditions and types of crops in order to determine the most suitable irrigation system as well as how to make a comprehensive design of an integrated irrigation/drainage system.

2114 Computer Skills

This course prepares students to: understand all the basic concepts of information technology and its related terminologies, have advanced skills developed for the use of office productivity packages, have the ability to fully utilize internet and e-mail service, have the knowledge of e-learning and distance education systems and how they work and their benefits. Field of Specialization: N/a

2213 Mathematics 1

This course is an introduction to business math. This course teaches the subjects of calculus and math related to business. Percentages, exponents, integration and so on are all taught in this subject. This course is to provide a foundation for students to understand the mathematical aspects of business going forward. Field of Specialization: N/a

2224 Statistics 1

This course focuses on preparing the students for business mathematical and statistical matters. It teaches the students about percentages, probabilities and begins to dive into statistical techniques. In the course students are exposed to different charts and graphs and understand the difference between quantitative and qualitative data. The students are to learn these concepts by using simple computer programs such as Excel or LibreOffice Calc. Field of Specialization: N/a

2234 Statistics 2

This course revolves around the practical applications of inferential statistical techniques in business and the social sciences. Students are exposed to different statistical programs. Furthermore, students are introduced to inferential techniques such as the t-test, the linear regression model, the one-way and two-way ANOVA. Students must demonstrate an ability to define different datasets, choose the most proper method for analysis, perform the analysis and analyze it within a business context. Field of Specialization: N/a

3100 General and Physical Chemistry

The course describes the fundamentals and principles of both organic and physical chemistry: the electronic structure of atoms, periodic table, forces between particles, bonding and orbitals, chemical formulas of different chemicals, measurements and units, equations, and stoichiometry. Thermochemistry, solutions and equilibrium.

3101 Organic Chemistry 1

The course describes the fundamentals of organic chemistry of simple aliphatic and aromatic compounds including: structure and bonding, classification and nomenclature, synthesis and reactivity, reactions and properties, resonance and stability, mechanism of organic reactions and intermediates, acidity and basicity concepts for organic molecules, aromaticity and stability of aromatic compounds and finally, nomenclature and chemistry of simple polynuclear aromatic hydrocarbons. Students will also learn about carbon atom structure and polymers.

3112 Analytical Chemistry 1

The course describes methods used in chemical analysis, acid-base titration, buffers, neutralization in aqueous and non-aqueous media, complex formation titrations, precipitometric titrations, preparation of standard solutions and finally, analysis of different samples.

3200 Botany & Pharmacognosy

The course gives a general introduction to Pharmacognosy (medicinal plant definition, classification, factors affecting cultivation, collection, drying, packing, storage and adulteration of medicinal plants and their secondary metabolites). The course covers the drugs derived from the leaves as one of the plant organs: classification, morphology, histology, monographs, herbarium, powdered drug identification, adulteration, chemical tests, active constituents, uses, and pharmaceutical preparations of leaves e.g. senna, belladonna, datura, hyoscyamus, digitalis, ginkgo, tea, uva ursi, and henna.

5101 Plant Nutrition

The course aims to help students understand soil – plant relationship, essential nutrients and their functions, bioavailability, uptake and transport in plant. Plant response to organic manure, nutrient metabolism in plant, and the adverse effects of salts and chemicals on plant growth.

5102 Principles of Organic Agriculture

The course aims to develop and improve the quality and the availability of didactic material on organic agriculture in tropical and sub-tropical countries. To offer a resource basis for students with the idea of encouraging individual adaptation and further development of the material according to the needs. To provide material and ideas on Organic Agriculture and introduce a handbook for those who want to get a more clear and complete idea on the basics of organic farming.

5111 Principles of Organic Horticulture

Ensure that students develop knowledge and understanding skills related to concepts of organic horticulture farming, conversion to an organic system from a conventional system, agricultural practices and management of organic vegetable and fruits production. How to solve and overcome the problems under fruit and vegetables organic production.

5112 Sustainable Irrigation Management

At the end of the study of this course, the student should enable to knowledge of Available water resources in Egypt, Different irrigation methods (surface irrigation – sprinkler irrigation – micro-irrigation) in terms of (description - Advantages and disadvantages - Hydraulics - Design - Run - Evaluation), Selection of the suitable irrigation system, Economics of irrigation methods.

5113 Comparative Biology 1

The course aims to study: Plant cells and tissues, plant taxonomy, and photosynthesis, selected topics in animal biology such as taxonomy, animal physiology and ecology, Classification of animal kingdom, invertebrate pests importance on plants-seeds-fruits and domestic animals their biology and methods of management, Vertebrate pests (wild birds - rodents) agricultural production damage either in field or livestock's (their biology and methods of management).

5114 Agricultural Biochemistry

This course will give students an understanding of biochemistry in an agricultural perspective. Students will learn about amino acids and protein chemistry, the enzymes and enzyme kinetics. Nucleotides and nucleic acids, digestion and absorption of carbohydrates in animals, lipids and proteins and digestive secretions. Also, this course covers carbohydrate chemistry, Monosaccharides, disaccharides, and homo- and hetero-polysaccharides.

5121 Post-Harvest Technology

Importance of Postharvest Technology, Comparison between perishable and non-perishable crops, Value of harvested crops, The Postharvest Food Pipeline: Stages at which crop losses, Preharvest factors, Biological factors (Physiological factors, insect pests), Environmental factors, On-farm (Primary) processing technologies, Storage technologies for primary processed products, Technologies for management of perishable produce, Maturity and indices, Parameters used to describe quality of commodities, Grade standards and inspection, Mechanical and Hand harvesting, Preparation methods of produce for the Fresh market, Packaging and packages for fresh produce.

5122 Soil Microbiology

This course aims to provide the students with the concept soil microbiology including the major groups of soil microorganisms and their biological activities in soil ecosystem. In addition, the students may understand the role of these microorganisms in nutrients cycling in soil, their contribution to soil fertility and soil biotechnology. In addition, the course covers the basic knowledge of soil microbes – plant interactions as well as the various microbial relationships about soil productivity. Furthermore, students will learn the principles of microbial genetics.

5123 Ecology & Agro-Ecosystems

Students in this course are taught ecological principles applicable to most ecosystems, understand the principles and functions of agroecosystems, examine examples relevant to current issues in agricultural ecology, and explain how applying ecological concepts and principles to the design and management of agro-ecosystems improves long-term reliability in agricultural production.

5124 Organic Crop Production & Management

This course enables students to understand the fundamentals of organic crop production as well as methods of managing the crops. Students delve into more complex issues surrounding the management of the organic crops including a holistic approach towards organic methods including pest control, soil management, irrigation management, and so on.

5131 Organic Vegetable Production

Students in this course will learn about methods of growing different vegetables and their harvesting methods. Vegetables will include potatoes, sweet potatoes, bulb vegetables crops, etc. Students will also learn about different methods of applying organic production methods for vegetables as well as the challenges that they will face for this kind of production.

5135 Plant Pathology & Entomology

Students in this course will learn about the basics of plant pathology and entomology. Students will thus be exposed to the core problems that will face the various crops in terms of diseases & pests. Special focus will be placed on the kinds of pests and diseases that organic crops are exposed as well as methods of identifying the diseases/pests. Students will also learn about the principles of plant genetics as well as microbial genetics.

5141 Applied Environmental Management

This course will cover topics relating to the practical application of environmental management techniques. Students will learn about the main environmental and ecological harm caused by major agricultural activities (e.g. deforestation, harvesting, etc.) as well as key methods for mitigating the harm caused by such activities. Students will also learn about the community as an essential part of the surrounding environment and how the people factor in to these considerations.

5142 Biological Control

In this course, students are expected to Understand the concept of natural balance, realize the adverse effect of chemical on the environment, Know the role of biological control in IPM programs, Make use of natural enemies as biological control agents, Apply computer facilities to search for scientific data and information, Rear and produce some biological control agents, & apply bioagents in controlling pests on both lab and field scales

5143 Production of Industrial Crops

This course is designed to illustrate the principles of crop science. It aims to give the student brief information about industrial crops such as cereal, legumes, oily crops, sugarcane and sugar beet, fiber crops as a food and as raw materials for industry. Also illustrate the factors affecting growth and yield crop characteristics required for human consumption.

5144 Comparative Biology 2

A major new focus of modern organismal biology is the comparative method by which the evolution of diversity is studied by comparing various types of data among species to elucidate historical relationships and map evolutionary change. Examines all botanical topics from microscopic level to the geological records of evolution, including anatomy, taxonomy, morphology, cytology, plant kingdom, relation between structure and function and economic botany. The purpose of this course is to provide the opportunity for students to explore several of the most important features of the diversity that occurred including the evolutionary origins of different characteristics of most recent plant phyla.

5145 Soil Fertility Management

Understand; the influence of physical, chemical and biological properties of soil on the availability of nutrients to plants, the effect of nutrients on plant growth, the importance of nutrient management in various soils and organic farming systems; and acquire the ability to assess soil fertility and make fertilizer recommendations that are agronomically efficient (optimum production), environmentally safe (minimal pollution) and economically profitable.

5150 Organic Livestock Husbandry

This course focuses on teaching students to be able to summarize the general concepts and rules of organic animal husbandry, list the principles of organic animal production, Explain basic concepts in organic farming, list the basic standards on animal husbandry management and animal health, List the certified organic dairy and poultry products, define principles for handling grazing animals, outline welfare problems in current systems of veal and poultry production, recall the basic equations that are used in animal breeding, discuss factors affecting livestock production, indicate the importance of nutrients, vitamins and minerals of feedstuffs, and report the basics of feeding practices of farm animals under organic production system. Furthermore, students will learn the principles of animal genetics.

5151 Technical Farm Planning

This course focuses on the technical aspects of farm planning and management. Students are taught to make a general and technical outline of a farm taking into account the different crops, seasons, climate, and available facilities. Furthermore, students are taught how to plan for different scenarios and use different planning methods for risk mitigation and for maximizing crop yields.

5152 Agricultural Engineering

The course focuses on the analysis and design of field machinery systems and machine components through study of the principles of mechanical design, joining techniques, hydraulics, controls, ergonomics, and safety. Furthermore, students are taught on methods of evaluating machines as well as mechanical system performance.

5153 Rural Sociology

By the end of the course the student will be able to define and understand the basic concepts, topics and issues of sociology and their applications on rural people, groups and areas; to describe and explain the types and characteristics of rural communities (rural-urban differences) . The student will be able to review and explain the basic concepts, principles and topics related to: rural culture (cultural lag, relativism, and ethnocentrism), rural norms and values; rural institutions, systems and organizations; rural social change, demographic issues (rural-urban migration); rural social problems.

5155 Food Safety

To compile information that students are expected to be familiar with as a part of their college or university program, before they seek career positions in the food industry. To prepare professionals in the area of Food Safety and Technology for enhancing products safety and quality in the food industry. To provide food industry quality practitioners with updated information relating to their work, including the evolution of principles, practices, and terminology in food quality assurance and food quality management. To prepare the future leaders of the food industry and allied government and research institutions to assure food security, quality and safety. To introduce the student to the Codex General Principles of Food Hygiene as a firm foundation for ensuring food safety and to their prerequisite relationship to the development of effective HACCP or equivalent systems. To examine the importance and requirements of good hygienic design and construction, including appropriate siting, design, premises, equipment and facilities to control risks of contamination.

5158 Research Methodology & Experiment Design

Students in this course will learn about the fundamentals of research methodology in the context of both agriculture and food processing. Students will learn about how to design and implement a scientific experiment as well as how to develop the problem, research questions, & hypotheses. Students will also be taught on statistical methods for validating or rejecting hypotheses.

5161 Organic Standards & Accreditation

To develop and improve the quality food products through the application of different standards, regulation and guidelines. To offer a resource basis for students with the idea of certification and accreditation process. To provide material and ideas on Organic Agriculture standards and certification and introduce a handbook for those who want to get a more clear and complete idea on the certification and accreditation of organic farming.

5162 Bio-Remediation

Bioremediation is an increasingly accepted remediation technology. It uses biological agents (microorganisms and plants) to treat hazardous contaminants in soil, water, and air. Bioremediation is a highly multidisciplinary, evolving technology that encompasses microbiology; chemical, civil, and environmental engineering; environmental soil, and analytical chemistry. The aim of this course is to introduce the concepts pertinent to bioremediation to students of agricultural sciences and supply them with the skills and knowledge required to support/promote the practical application of bioremediation.

5164 Organic Plant Breeding & Seed Production

Qualify students able to understand principles and theories that deal with genetic improvement and production of certified seed. These students will be able to suggest a plan and construct a plant breeding program for developing new cultivars for organic farming, which possess reliable tolerance/resistance to various biotic and abiotic stresses.

5165 Biofertilizers

This course aims to provide the students with the concept bio fertilization including the most important microorganisms that used in bio fertilizers industry. In addition, the students may understand the concept of bio-fertilizers technology by means of mass production, applications and economics. Meanwhile, the course covers the major types of bio fertilizers produced in Egypt, their cost and availability as well as the constraints in bio- fertilizer technology.

5166 Biostatistics

This course focuses on the specifics of biostatistics within the context of agriculture. This course builds off of the course of Statistics 2, but in an applied manner. Students are taught on statistical software such as SPSS (or its open source alternative, PSPP) in order to conduct inferential statistical tests including t-test, ANOVA, Regression, Chi-Square, etc.

5167 Agricultural Supply Chain Management

This course focuses on teaching the fundamentals of supply chain management within the context of agriculture. In this course, students will learn about the entire agricultural supply chain starting from the seed production till the products reach the final consumer. Students are taught about the concepts of value chain in agriculture and methods of adding value at each step of the chain.

5173 Organic Medicinal & Aromatic Herbs

Students in this course will be oriented towards the recognition of the different groups of Medicinal & Aromatic plants according to their main components, families, part used and uses, learning the proper agricultural practices for propagation, cultivation method, growth problems and how to overcome such problems, harvesting stage and postharvest treatments, & Quality control processes.

5174 Organic Pest & Disease Management

Enable the students to pattern of effective and environmentally sensitive approach to pests and disease management in organic agriculture system and define their students the different methods of integrated pest management to preserve a healthy environment in an avoid to use of synthetic harmful pesticides.

5175 Agricultural Biotechnology

This course focuses on the basic applications and scientific approaches for modifying living organisms. Students will learn about the core applications of biotechnology in the agricultural process. Students will learn about the applications of biotechnology on plant science, food science, and animal science. Furthermore, students will learn about the principles of plant genetics, animal genetics, & microbial genetics.

5176 Agricultural Nanotechnology

Students in this course will learn about the core principles of nano-technology and their growing role in the field of agriculture. Students will learn about the usage of nano technology in different contexts (single molecule detection, delivery of nanocapsules, controlling application of growth hormones, etc.)

5177 Organic Fruit Production

Students in this course will learn about methods of growing different fruits and their harvesting methods. Fruits will include grapes, pomegranates, strawberries, citrus fruits, etc. Students will also learn about different methods of applying organic production methods for fruits as well as the challenges that they will face for this kind of production.

5178 ICT for Crop Production

Students in this course will learn how to use different Information & Communication Technology (ICT) in the field of crop production. Students will learn how to use ICT tools for connecting with relevant stakeholders, conducting digital simulations, and using other tools for enhancing the crop production process.

5179 Ethics in Agriculture & Food Processing

Students in this course will learn about the professional ethical practices in the fields of agriculture and food processing. Students will learn about the ethics of food safety, sanitary practices, as well as legal and ethical frameworks, national and international.

5181 Sustainable Rural Development

By the end of the course the student will be able to define and justify the Sustainable Rural Development (SRD) process, programs and projects, to explain the three essential dimensions of this process (economic, environmental and socio-cultural) to achieve the objectives of rural poverty reduction, food security, sustainable management of the natural resource base and improving the quality of rural life. The student will be able to review and explain the principles of SRD, its basic theories and approaches, the role of both communication and agricultural extension on facing the challenges facing SRD. The student will also be able to define and explain the roles of Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs), the role of gender in SRD, in addition to defining and explaining the process of planning and evaluation of SRD programs.

5188 Organic Crop Production Internship

Students are expected to complete an internship with an approved company. During this internship, students will be expected to engage with topics related to their scientific field, and gain practical knowledge pertaining to this field and apply the theoretical concepts learned in their work.

5189 Organic Crop Production Graduation Project

Students are expected to complete a graduation project in the field of Organic Agriculture Products in which students work with a supervisor to conduct a project that addresses a major need of the Egyptian society.

5201 Food Preservation & Biodeterioration

Traditional Methods of Food Processing and Preservation, principals, (i.e., Fermentation, Dehydration, Pickling, Concentration, Thermal Processes), Different types of Biodeterioration, mechanisms of food Biodeterioration, Micro-organisms involved in biodeterioration reactions, Control of Biodeterioration in Food, Thermal Processing, Product classification, Microbial destruction, Cold-spot temperature histories, Lethality calculations, Quality attributes, Food Chilling, Theory, operations, equipment's, Chilled storage and freezing, The physical and chemical aspects of freezing, effect of freezing on micro-organisms, Food freezing operations, Monitoring the quality and safety of frozen foods, Drying processes and equipments, kinetics during the drying process, Hurdle Techniques, Hurdle technologies, Predictive modelling, Novel Commercial Preservation Methods, Ohmic heating, High-pressure processing, Microwave and radio-frequency heating, Pulsed electric field processing, Irradiation.

5211 Food Engineering

This course mainly focuses on methods of applying food engineering concepts within the food processing system. Students will learn the application of different engineering concepts within the context of food processing. This will include learning about thermal processing, refrigeration, dehydration, etc.)

5212 Food Packaging & Storage Technology

Introduction to Food Packaging and Shelf Life, Food Quality and Indices of Failure, Shelf Life Testing Methodology and Data Analysis, Packaging and the Microbial Shelf Life of different types of Food, Shelf Life of Foods in Biobased Packaging, Active Packaging. The role, function and selection of packaging materials, Structure of the packaging industry, extrusion, printing and conversion technologies, The physical and chemical properties of the packaging materials used for foods in relation to polymer processing, food properties and processing, Principles and practices for the testing of packaging materials and package designs, Mass transfer in food packaging, The principles of design and technology to produce laminated packaging materials, active and smart packaging, and edible films, Food packaging lines, Preservation, packaging and shelf life testing for a selection of foods, Costs, waste minimization and sustainable packaging technologies, Advances in packaging science and technology, Regulatory aspects of packaging and labelling.

5221 Human Nutrition

Principles of Human Nutrition the physiological requirements and functions of major components i.e. protein, energy, lipids, vitamins and minerals, health and diseases in human populations. Dietary sources, intake levels, physiological role, and requirement of major nutrients. The biological determinants of nutrient requirements and the assessment of nutrient status in individuals and populations. The role of nutrition in growth and health through the life cycle. The rationale for the development of dietary guidelines and of nutrition policies in different countries. BMR and REE: Energy Balance, Body Mass index, Body Fat and Body Water, Dietary and Nutrient, Recommendations, Dietary Guidelines, Food Guide Pyramids, and Other Aids, Dietary Reference Intakes, Nutritional Irregularities, Malnutrition, Protein-Energy Malnutrition, Kwashiorkor Syndrome, Marasmus, Carbohydrate Deficiency, Deficiencies in Essential Fatty Acids, Mineral Deficiencies, Mineral Toxicity, Dehydration, Vitamin Deficiency and Toxicity, The Role of Diet in Cardiovascular Disease and Cancer, The Role of Diet in Diabetes, and Gastrointestinal Health, The Role of Diet in Diabetes, and Gastrointestinal Health, Food and Environmental Factors.

5222 Physical Properties & Sensory Evaluation

Sensory attributes of foods and beverages and their perceptions, flavor, texture and other sensory characteristics of food and consumer products for quality assurance, product development and optimization, studies of alternative processing, packaging and storage, as well as relating sensory to physical properties, human sensory system. Measure consumer perception and acceptance of the products. Food Sensory Science.

5223 Sustainable Food Waste Management

Introduction to food wastes, Food Losses, Food Residuals, By-Products, Legislation, Waste Management Hierarchy, Bio-Waste, food waste Causes of Food Waste Generation, Consumer Behavior, Lack of Awareness, Aesthetic Standards, Food Merchandising, Companies Private Standards and Reputation, Food Prices/Financial Incentives, Technical Factors, Methods of Food Waste Reduction, Public Awareness Raising/Education, Food Recovery and Redistribution, Legislation—Governmental Interventions, Economic Incentives/Financial Instruments, Forecasting and Correct Inventory Management/Planning, Companies Initiatives, Separate Collection of Food Waste, Alternative Use, Energy Recovery, Novel Added-Value Materials/Products, Main Economic Activities, Renewable Energy, Food Consumption and Undernourishment, Biodegradable Waste, The State of the Problem of Food Waste, Food Waste Generation, Food Waste Treatment, Methodologies, for different types of food processing.

5224 Food Chemistry & Analysis

Sampling and different types of samples, determination of food components, carbohydrates, proteins, lipids as well as minor components. Different instruments used for food components determination, chromatography, polarimetric, spectrophotometer, and other chemical determination. Food quality and food analysis.

5231 Food Microbiology & Fermentation Technology

Introduction to the microbial ecology of foods, Role of food characteristics and environment on microbial fate, microbial growth, death, persistence, competition, antagonism and survival in food, Perspectives on applying food ecosystem modeling, Predictive microbiology: food-borne microorganisms in food processing, Probability and kinetic models for food processing, Thermal inactivation, Non-thermal inactivation and modeling stress-adaptation strategies, Fermentation: a dynamic environment for microbial growth and pathogen inactivation, Colonial versus planktonic type of growth: modes of microbial existence on surfaces and in liquid, semi-liquid, and solid foods, Modeling microbial transfer between processing equipment and foods, Alternative multivariate approaches: the use of bioinformatics for characterizing spoilage and product classification, Impact of unit operations on microorganisms of relevance in foods, Microbial safety and stability of heating operations: challenges and perspectives, Production of fermented products, Factors affecting efficiency and quality, Types different of fermentation methods.

5232 Processing Meat & Poultry

This course deals with the technology involved in the processing and storage of the various food products originating from meat, fish, poultry and eggs. The safety issues associated with these products, Product development of added value products, Selection of meaningful parameters for Sensory evaluation, Appropriate utilization of ingredients from other commodities such as Dairy and Grain products in meat (fish, poultry and egg) products and, product and process food microbiology. Meat Industries: Characteristics Muscle Biology, Meat Composition, Postmortem Muscle Chemistry, Quality and Other Attributes, Analytical Methods for Meat and Meat Products, Recent Advances in Meat Quality Assessment, Meat and Functional Foods, Sources and Control of Microbial Contamination, Evaluation, Chilling and Freezing Meat, Slaughtering Operations and Equipment, Secondary Processing: Principles and Applications, Meat Emulsions, Marination: Processing Technology, Drying: Principles and Applications, Thermal Technology, Secondary Processing: Products Manufacturing, Mold-Ripened Sausages, Meat Safety and Workers Safety.

5241 Industrial Services & Machine Maintenance

Principles of Air-Conditioning Systems, Industrial Refrigeration, Refrigeration & Air Conditioning Equipment, Boiler, Air Compressor, Water Treatment Plant, Wastewater Plant, Generators & UPS System, ventilation, Topics covered include electricity, thermodynamics, psychometrics, diagnostic, forced air furnaces, air distribution systems, and heating/cooling load analysis.

5242 Cereal Technology

This course studies cereal grains used for human food. Different Cereals and their products, Chemistry and nutraceutical compositions, Potential health beneficial effects, the major focus on wheat characteristics physical and chemical properties, functionality and utilization. Baking ingredients such as yeast, chemical leaveners, fats, oxidants, enzymes and other modern improvers, and inter-relationships among intrinsic and extrinsic factors. The different quality requirements of flours for various products, the scientific and practical explanations for these differences, and the desired quality characteristics of the finished products. Storage, milling, baking, quality characteristics, improvers and rheological characteristics. Street vended foods, raw material, processing, handling and quality.

5251 Processing Fruits & Vegetables

Characteristics, composition and nutritional value, importance of fruit and vegetables; Desirable and undesirable constituents; Post-harvest handling, Physical and chemical changes during maturation; Principles of heat, moisture and environment management; Quality: criteria, factors affecting, evaluation and management; Pathological, disinfestation and physiological deterioration and their control; Preservation and processing: basic principles; Shelf life extension; Use of solids, chemicals, fermentation, irradiation in fruit preservation; Processing methods By-products of fruit and vegetables processing, Waste management: characterization, planning, treatment of effluent; Environmental auditing.

5254 Disease & Pest Control in Food Processing

Pest Control Program, Pest Control Chemical Usage Log, Floor Plan, Pest Control Monitoring Record. Food Manufacturing, Processing and Storage, Food Manufacturing, Processing and Storage Integrated Pest Management, Pesticide Labels, Applications and Regulations, Insect Pests and Control, Rodents and Their Control, Equipment And Application Techniques, Respiratory Protection. Pest Control Program, Pest Control Chemical Usage Log, Floor Plan, Pest Control Monitoring Record. Food Manufacturing, Processing and Storage, Food Manufacturing, Processing and Storage Integrated Pest Management, Pesticide Labels, Applications and Regulations, Insect Pests and Control, Rodents and Their Control, Equipment And Application Techniques, Respiratory Protection.

5261 Dairy Processing

Dairy Industry: Production and Consumption Trends, Chemical Composition, Physical and Functional Properties of Milk and Milk Ingredients, Microbiological Considerations Related to Dairy Processing, Regulations for Product Standards and Labeling, Milk from Farm to Plant, Ingredients in Dairy Products, Fluid Milk Products, Cultured Milk and Yogurt, Butter and Spreads: Manufacture and Quality Assurance, Evaporated and Sweetened Condensed Milks, Dry Milk Products, Whey and Whey Products, Ice Cream and Frozen Desserts, Puddings and Dairy-Based Desserts, Role of Milk and Dairy Foods in Nutrition and Health, Product Development Strategies, Packaging Milk and Milk Products, Non-thermal Preservation Technologies for Dairy Applications, Laboratory Analysis of Milk and Dairy Products, Management Systems for Safety and Quality.

5262 Fundamentals of Food Biotechnology

Principles of food biotechnology, types and application, Microorganisms for food production, Enzymes in food production and application, Genetic engineering tools, Genetic modification of bacteria, plants and animals, Social, economic, ecological issues of food biotechnology.

5264 Food Safety and Food Laws

Food spoilage and diseases transmitted through food – control of food manufacturing to produce safe food, the local, regional and international laws and regulations related to food safety and quality.

5265 Food Additives & Fortification Technology

Students in this course will learn about the types, classifications, functions, chemical structures, physicochemical characteristics, mechanisms of reactions, and applications of food additives and processing aids in food processing. Furthermore, students will learn about the principles of food fortification and its application in food processing. Regulations and ethical issues concerning additives and fortification are also covered.

5266 Flavor Technology

Students in this course will learn the basic concepts behind flavoring and flavors in food processing. Students will learn about different flavor technologies with a specific emphasis on natural and organic flavoring techniques. Different extraction techniques and process will also be covered as well as methods of application and usage

5269 Food Processing Technology Internship 1

Students are expected to complete an internship with an approved company. During this internship, students will be expected to engage with topics related to their scientific field, and gain practical knowledge pertaining to this field and apply the theoretical concepts learned in their work.

5271 Oils & Fats Technology

The course aims to study the different extraction methods of fats and oils from their sources. The physical and chemical properties of fats and oils. The refining procedures besides, the basic background of rancidity, Frying and interesterification of fats and oils. Some fat products such as margarine, shortening, soap and detergents.

5272 Quality Assurance & Hazard Analysis

Lectures, discussions, and demonstrations concerning microbial, chemical and biological safety of food, principles of sanitation for the food processing and retail foods industries.

5273 Processing Sugars & Special Products

The course aims to study Sugar production from different sources, steps & characteristics and Processing of tobacco, tea, coffee and chocolate.

5274 Halal Assurance Systems

Students in this course will be exposed to the different assurance and accreditation systems surrounding halal certification. Students will be exposed to the different interpretations and controversies around the interpretation of “halal” and “haram” within the context of food. Students will also be taught about the halal market and its implications for food processing, exporting, and importing.

5275 Canning Technology

In this course, students will be taught about the major concepts behind canning and canning technologies. Students will learn about the thermal processing, can sanitation, packaging, as well as food acidity and the equipment used in canning and packaging.

5276 Functional Foods

This course will focus on the relationship between food, nutrition, & health in the context of organic agricultural and organic foods. Students will be taught about the functional attributes of food and food components. Students will be taught methods of analyzing and developing functional foods and how they relate to preventing health issues and diseases.

5278 ICT for Food Processing

Students in this course will learn how to use different Information & Communication Technology (ICT) in the field of food processing. Students will learn how to use ICT tools for connecting with relevant stakeholders, conducting digital simulations, and using other tools for enhancing the crop production process.

5281 Chemical & Environmental Engineering

Chemical Process Principles, Chemical and Environmental Engineering Laboratory, Environmental Awareness for Engineers, Introductory Organic Chemistry, Instrumental and Analytical Chemistry, Biochemical Engineering Principles, Process and Environmental Plant Operations, Energy and Low Carbon Technologies, Water and Wastewater Engineering, Environmental Law for Engineers, Environmental Engineering Practice, Energy Management & Sustainable Development, Industrial Safety, Fire Fighting & Water Distribution Systems Fire Protection of Structures.

5281 Food Product Development

New Food Product Development, Definition and Characterization, Marketing Characteristics of New Products, Undertake New Food Product Development, Organization and Its Influence on New Product Development, Research for Creativity, Constraints to Innovation, Phases in New Product Development, Sources for New Product Ideas, Strategy and the Strategists, Marketing's Perspective, Maintaining Safety and Product Integrity, Role of Engineering in the Development Process, Commercial Feasibility, New Food Product Development in the Food Service Industry, Understanding the Food Service Industry, Characteristics of the Food Service Market, Developing Products for the Food Service Sector, Quality in the Food Service Market, Criteria for Evaluating a Test Market, Product Development in the Food Additive and Food Ingredient Industries, Additive and Ingredient Market Environment, Ingredients and the New Nutrition.

5282 Technology Risk Management

The course aims to concentrate on standards for fast prepared foods starting from production steps and handling that conserve its nutritional value and safety on consumption. Basics of management, Strategic management principles, Corporate governance and ethics, Organizational behavior, Roles, culture and control in the risk environment, Risk management frameworks, Tools and techniques of risk management.

5288 Food Processing Technology Internship 2

Students are expected to complete an internship with an approved company. During this internship, students will be expected to engage with topics related to their scientific field, and gain practical knowledge pertaining to this field and apply the theoretical concepts learned in their work.

5289 Food Processing Technology Graduation Project

Students are expected to complete a graduation project under the supervision of an instructor in the field of Food Processing Engineering in which students use the project to address a major need of the Egyptian society.

Total Number of Courses: 81