Academic Requirements and Regulations

For Bachelor Degree's

In

Renewable and Sustainable Energy Engineering (RSE)

Credit Hours System Program

2021/2020

1. Program definition

Renewable energy engineering is the link between the engineering branches involved in the design, installation, operation and maintenance of renewable energy systems. These branches include electrical engineering, mechanical engineering, architecture, environmental engineering, materials engineering and other engineering sciences. The specialization revolves around the methods and systems used to generate and distribute energy from sustainable and renewable sources. These methods and systems include persons, materials, information, equipment, sustainable energy sources and their applications in these environments. The renewable and sustainable energy engineering program is one of the important scenarios for achieving the "Egypt 2030" vision for energy planning, which includes maximizing the participation of renewable energy in the energy mix to around 40% until 2035. It prepares students to work in companies and institutions that contribute to sustainable solutions or actively integrate sustainability into their business strategies. It develops their scientific, mental and practical skills in ways to achieve sustainable development through renewable energy technology.

The Renewable and Sustainable Energy Engineering Program enables the students of the program to acquire the skills needed to design, implement and operate renewable energy systems such as solar, wind and other renewable energy applications. The program includes theoretical study of renewable energy engineering and practical applications in laboratories equipped and dedicated to this purpose in addition to field visits to projects in progress in order to prepare students for practical life. Moreover, the program includes field practical training periods during the years of study in projects under implementation, in cooperation with specialized companies in the labor market, which qualifies the students professionally to practice their work professionally in the labor market.

One aspect of excellence in the program is to enhance the student's ability to deal with complex systems based on multiple engineering disciplines at the same time and to visualize the appropriate system that combines the elements of the complex energy systems. The program also focuses on learning through case studies and multiple projects aimed at solving specific application problems in different energy fields, which is another element of excellence.

The program is designed to generate modern engineers able to apply their engineering knowledge in the practical applications of sustainable and renewable energy engineering.

2. Basic Informations

2.1 Program Vision

Providing a scientific environment to support and enhance academic excellence**.**

2.2 Program Mission

Preparing a distinguished graduate who has acquired the principles and skills of renewable and sustainable energy engineering in order to serve society and develop the environment.

2.3 Program Objectives

1. Prepare graduates who are able to use, develop and apply technical and administrative skills in dealing with electrical energy systems in general and especially in renewable and sustainable energy systems.
2. Develop the performance of graduates with distinctive skills and advanced concepts of renewable energy fundamentals.
3. Keep up with developments in technology and developing effective communication skills.
4. Preparing a graduate who will be able to develop knowledge and skills through self-learning
5. Collaborate with colleagues and others in solving problems through teamwork as team members or as leaders.
6. Qualify to pursue postgraduate studies and scientific research through the development of creative thinking and the ability to analyze problems and systematic thinking to solve them.
7. Establish the professional and ethical values of graduates as leaders in different areas of the energy sector.
8. Enable graduates to work not only in local markets but also in regional markets (especially in Arab and African regions) and international markets.
9. Promote and incorporate sustainability concepts in all program courses as well as embody a culture of sustainability for staff, students and graduates.
10. Create and strengthen a collaborative partnership with stakeholders in the field of skills, knowledge generation and application.

2.4 Program Graduate Attribute:

- Deal efficiently with modern technological methods used in generating and converting alternative energies
- Employ theories, information, data and ideas that achieve energy and raw materials rationalization and take decisions that guarantee good management and quality performance
- Model and design integrated energy systems in which different disciplines overlap
- Design, implement, operate and maintain renewable energy stations and conduct specialized research and studies in the energy field
- Deal with problems during the performance of tasks, communication skills and ensure the performance of equipment efficiently.

2.5 Graduate Competencies According to NARS 2018

According to NARS 2018, a graduate must be able to:

A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

A2. Develop and conduct appropriate experimentation and/or simulation, analyze, and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.

A4. Utilize contemporary technologies, codes of practice, and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

A5. Practice research techniques and methods of investigation as an inherent part of learning.

A6. Plan, supervise, and monitor implementation of engineering projects, taking into consideration other trades requirements.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies

A11. Select, model and analyze renewable energy systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of renewable energy systems.

A12. Design, model and analyze an electrical/electronic/mechanical/digital system or component for renewable energy application; and identify the tools required to optimize this design.

A13. Estimate and measure the performance of an electrical/electronic/mechanical/digital system and circuit under specific input excitation, and evaluate its suitability for a renewable energy application.

A14. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/mechanical/digital equipment, systems and services.

3. The Rules of Renewable and Sustainable Energy Engineering Program by Credit hours system

Article [1]: Granting Academic Degrees

Based on Faculty of Engineering Council request, Mansoura University grants a bachelor's degree in one of the following majors:

1. Biomedical Engineering
2. Communication and Computer Engineering

3. Mechatronics Engineering
4. Building and Construction Engineering
5. Chemical and Environmental Engineering
6. Renewable and Sustainable energy Engineering
7. Infrastructure and Environmental Engineering

Students are stipulated to complete the academic requirements necessary for one of these programs to obtain a B.Sc. degree in the required major. Study in these programs should take place in English within each specialization scope based on the credit hour system. Further, students should be aware of the requirements and regulations of each program and should be responsible for achieving them.

Article [2]: The Program Study System

The study system used in these programs is the American system of credit hours within the context of one semester.

Article [3]: The Credit Hour Standard According to the Reference Framework 2020

1. With regard to theoretical lectures:

One credit hour is calculated for everyone hour per week lecture during one semester.

2. For practical lessons and practical exercises:

One credit hour is calculated for each 2-3-hour workshop or exercises per semester.

Article [4]: The Academic Council

The Program Management Academic Council shall be formed by a decision from the University President based upon the Faculty Council nomination for two-year- period headed by Faculty Dean and the membership of:

1. Vice Dean of Education and Student Affairs.
2. Heads of Scientific Departments concerned with the program.
3. Program Executive Director.
4. Professor or assistant professor from the specialized scientific departments nominated by the Dean after taking the opinion of the Head of the department and it is permissible in special cases to include two lecturers at most to the membership of the council.
5. Two experienced members either internal or external.

The academic council of the program will perform all the duties of the faculty scientific departments with respect to education and students' affairs. Further, the academic council shall observe the following criteria with regard to assigning teaching duties to staff members:

1. Scientific departments nominations based on their specialty.
2. Students' surveys on the previous times the course was taught.
3. The program management opinion according to performance evaluation and follow-up.

Article [5]: The Program Executive Director

For each program, an executive director shall be appointed by the University President, after a nomination by the Faculty Dean provided that he is one of the faculty members specialized

in the field(s) of the program with associate / full professorship degree, for a minimum of two calendar years, renewable under the same conditions of the first appointment.

The executive director of the program shall perform the following tasks:

1. Implementing the program's internal regulation.
2. Coordination between the scientific departments in assigning teaching duties to faculty members.
3. Supervising students' academic registration.
4. Supervising the administrative work by the program staff.
5. Supervising the regularity of academic counseling in the program.
6. Following up the educational process regularity in accordance with the approved study schedules.
7. Supervising and regulating end-of-term and mid-term exams (if any).
8. Supervising field training and forming partnerships with distinguished training authorities.
9. Carrying out the secretariat of the council in the subcommittee of the academic council.
10. Organizing and supervising the program scientific conference.
11. Preparing the forms related to the financial duties in the program and submitting them to the higher management of the college.
12. Overseeing the development of the program's infrastructure, including runways, lecture halls, exercise halls, school laboratories and equipment.
13. Supervising the fulfillment of all quality assurance requirements in accordance with the standards of the National Authority for Accreditation and Quality Assurance of Education.
14. Preparing the annual self-study for the program to be presented to the Project Management Unit in the Ministry of Higher Education and Scientific Research.

Article [6]: Programs Coordinator for Digital Transformation

A programs coordinator for digital transformation is appointed by the Dean of the faculty after a nomination by the Faculty Vice Dean of student affairs (if three or more programs are available in the faculty) from the (associate) professors at the faculty having experience working with the credit hours' system and the programs for a period of two years' renewable with the same conditions of the first appointment.

The programs coordinator for digital transformation duties are:

1. Reviewing and auditing student registrations for all programs after approval of the relevant councils.
2. Reviewing the control works and fulfilling the final control stages after approval of the relevant councils.
3. Supervising the financial page follow-up for program students.
4. Reviewing the quality assurance work in the programs.

Article [7]: Registration Requirements and Entry Requirements

The student's registration for the bachelor's degree in these programs is required in addition to the general conditions stipulated in the executive regulations (Article 75) of the Universities Organizing Law as follows:

1. The student meets the admission requirements determined by the Supreme Council of Universities.
2. The student must have a high school completion certificate or its equivalent where major is in Mathematics.
3. The student fulfills the internal rules approved by the Faculty Board regarding the admission of students to these programs.

Article [8]: Transfer Conditions (change of course) and Re-enrollment

If the transfer is within the faculty, the transfer can occur before the start of the main semesters via approved rules by the faculty council and applied by the faculty representative for education and students affairs; while if the transfer is from another faculty within the university or from another university, the transfer is only through the central remittance office. At the beginning of the academic year, a student budget is made according to Table (1).

Table (1): The Symbol and Grade Corresponding to Assessment Obtained Degree by the Student when Converting from the Semester System to the Credit Hour System.

The percentage obtained by the student	Number of points	Estimate
Less than 50% (Failed)	00.0	F
40% to less than 50% (successful by clemency rules)	1.00	D
50% to less than 55%	1.00	D
55% to less than 60%	1.30	D+
60% to less than 65%	1.70	C-
65% to less than 68%	2.00	C
68% to less than 71%	2.30	C-
71% to less than 75%	2.70	B+
75% to less than 80%	3.00	B
80% to less than 85%	3.30	B+
85% to less than 90%	3.70	A-
90% to less than 95%	4.00	A
95% to 100%	4.00	A+

1. Transferring students who wish to enroll in one of the accredited programs specializations must have completed level (000) courses with an average grade of no less than 2,00 (maximum grade 4,00), and according to the rules determined by the faculty council and approved by the university council, based on the available capacity of the program.

2. Students who are transferred from the regular stream may be admitted to the same faculty, according to conditions determined by the Faculty Council and approved by the University Council based on the program's available capacity.
3. Students who have already spent two years in five years studying colleges outside of Faculty of Engineering, Mansoura University, and wish to join the program should submit a case statement from the faculty in which they were enrolled stating the degrees they have obtained and whether they have obtained credit hours or not.
4. It is permissible to accept international students who have obtained a high school diploma or its equivalent in every academic year according to the order of their degrees according to the nominations received by the Faculty from the General Administration of International Students. Then, the faculty council undertakes a proposal in exchange for the cost of educational services other than the university fees prescribed for these students.
5. Students, who have previously left studying in the program for a period of up to four semesters at a maximum and who have already received high estimates in the period they spent, may re-register for the program if they wish to do so, after the approval of the relevant academic council and in accordance with the rules for regular study [11].

Article [9]: Obtaining the Degree Requirements

In order for the student to obtain a bachelor's degree in the aforementioned programs, Article [1]:

1. The student must successfully pass at least (160 credit hours).
2. The student must pass the graduation project.
3. The student must pass courses where the evaluation is Pass / Fail and does not count towards the student GPA such as summer training.
4. The distribution of subjects that are included in the study program for graduation requirements should be as follows:

Table (2) Distribution of the program hours to graduation requirements

Specialized Groups	Min %	Max%
University Requirements	8%	-
Faculty Requirements	20%	-
General Major Requirements	35%	-
Accurate Specialization Requirements	-	28%

Taking into account that the academic plans for each program achieve the courses and the indicative proportions set by the National Authority for Quality Assurance of Education, which includes the following curricula:

1. Social and Human Sciences
2. Business Administration
3. Mathematics and Basic Sciences
4. Engineering culture
5. Basic Engineering Sciences
6. Engineering and design applications

7. Project and field training

Article [10] Participating Scientific Departments

The academic council supervises, for each program, teaching of all the courses of the subprograms that follow it, including humanities, Arabic language and technical reports. The scientific departments assign teaching duties of the various courses after being approved by the faculty council. Teaching should be conducted through the following scientific departments, each in the scope of its major:

1. Electronics and Communications Engineering Department.
2. Computer Engineering and Control Systems Department.
3. Production Engineering and Mechanical Design Department.
4. Electrical Engineering Department.
5. power mechanical engineering Department.
6. Mathematics and Engineering Physics Department.
7. Structural Engineering Department - Public Works Department - Irrigation and Hydraulics Department.
8. Architecture Department.
9. External departments in the field of anatomy, physiology and public health from the Faculty of Medicine.
10. External departments in the field of organic chemistry, biochemistry, Microbiology and Pharmaceutical procedures from Faculty of Pharmacy.
11. External departments in the field of languages - Faculty of Education or Faculty of Arts – English Major.
12. External departments of the Faculty of Commerce in the field of management and marketing.
13. External departments of the Faculty of Law in the field of legislation and administration laws.

The academic council of the program administration approves the faculty members nominated by the concerned departments, and these nominations are presented to the faculty council for approval such that the language of study for all courses is English.

Article [11]: Study Duration and its Dates

The duration of the study in the program is ten main semesters for all students, and the student may finish studying the program in nine semesters (when the student has successfully passed 160 credit hours). The academic year is divided into two main semesters, each ending with an exam, according to the content stated in the curriculum schedules appended to this regulation.

The academic year is divided into three semesters:

1. The first semester: Autumn semester (main semester): It starts at the beginning of the university academic year for a period of 14 teaching weeks.
2. The second semester: Spring semester (main semester): It starts after the mid-year vacation of the university for a period of 14 teaching weeks.

3. Summer semester: It starts in July for a period of 7 teaching weeks doubling the course contact hours.

Enrolment and Registration take place before the start of each semester.

Article [12]: Study Regulations

All students enrolled in the program must adhere to the following university rules:

1. **Tuition Fees**

   Registration fees and educational services are paid at the start of registration, and the faculty council determines the fees required for registration and educational services after they have been approved by the university council.

2. **Payment Rules**

   The student is not allowed to register at the next level or know his result unless all tuition fees are paid to the lower level. Upon graduation, the student does not receive his papers and certificates indicating that the degree was awarded unless all the late tuition fees have been paid in full.

3. **Attendance**

   The course professor records the attendance of students at the start of each theoretical lecture, or an exercise / practical workshop in a record prepared for that by the Student Affairs of the program, taking into account the following:

A. The absence limit allowed for the students without an acceptable excuse is 25% of the total hours of the tutorials and labs of the course, and the course professor shall notify the Student Affairs Department to warn the student twice, the first warning is after the student exceeds the absence rate of 10% of the course hours, and the second warning is after exceeding the absence rate of 20%. Then, the student's case is presented to the academic council to take measures needed to prevent him from entering the course exam.

B. If the student's absence rate exceeds 25% and the student's absence without an approved excuse is accredited from the academic council of the program, the student will score a deprived grade in the course and the result of a "deprived" grade will be included in the calculation of the student's semester grade and the overall GPA.

4. **Partial Discontinuation Condition**

   Students must notify the academic advisor assigned to them by the academic council when they have stopped their studies for more than a week, and if the discontinuation is a result of illness, a "being sick declaration" must be submitted from an accredited governmental hospital or medical center that is approved by the university's medical administration within the specified times. If the student does not take the exam as a result of the illness, a "being sick declaration" must be introduced within the stipulated timings. In addition, a "being sick declaration" approved by the medical administration of the university must be introduced by whom the student's affairs will be notified of the expected absence period for the student.

5. **Enrollment Stoppage**

   In case that the student stops his enrollment in one of the new programs, the student shall pay the related administrative fees.

6. **Address Change**
   The student must notify the faculty administration of any change in his postal address.
7. **Demurrage**
   If the student is late in paying the fees, the decisions approved by the College Board and the University Council in this regard will be applied.

Article [13]: Academic Registration and Academic Load

1. **Registration**
   The academic council of the program announces the dates of registration in the academic curricula through the approved academic agenda. Students should review their choices with the academic advisors assigned to them according to the instructions written in the program's guide announced on the program's website on the official university website. Registration will not be allowed after the specified date, and if the defaulters are allowed to register, this will be accompanied by a delay fine after being submitted to the academic council.
2. **Advertising**
   Information on registration steps is announced in advance of each semester (Academic Agenda).
3. **Academic Load Per Semester**
   The minimum and maximum number of credit hours a student is allowed to register in one semester is determined as follows:

Table (3): The Maximum Registration

No	Student's GPA	Maximum Registration
1	**GPA<2**	Up to 14 Credit hours
2	**2≤GPA<3**	Up to 18 Credit hours
3	**3≤GPA**	Up to 21 Credit hours

A. The minimum number of hours a student is allowed to register in **Fall** and **Spring** semesters is 12 credit hours, except for graduation or stumbling cases (under academic observation) based on the approval of the Academic Council.
B. Students may register some courses in the summer semester with a maximum of two courses and up to 3 courses in case of graduating in the summer semester. In all cases, graduation projects may not be registered during the summer semester.

Article [14]: The Academic Adviser

The academic council of the program appoints an academic advisor from the teaching staff, at the rate of an academic advisor per 25 students, to guide students in their study trajectory and help them choose the academic courses. Further, he or she determines the number of credit hours they can register according to their circumstances, abilities and academic readiness, and help them solve encountered problems during the study. Besides, he or she supervises the students' study programs, monitoring their progress and monitoring their performance as part of the educational process.

1. The academic advisor meets with his/her students periodically to avoid students being exposed to academic warning.
2. No administrative procedures are taken for any student except through the academic advisor and with his written approval.
3. Each academic advisor determines a time period in his study schedule every week, and a report of this meeting is prepared and submitted to the program management.
4. Students must obtain the approval of the academic advisor assigned to them in choosing a study trajectory before registering for courses in each semester and in the summer semester.

Article [15]: Addition, Deletion and Retraction

1. After registration, the student may add or delete one of the courses in ways and steps that are approved by the academic council of the program.
2. The student may, after the approval of the academic advisor, unregister one or more courses until the end of the fourth week of study only, without violating the academic load stipulated in Article [13].
3. After the approval of the academic advisor, the student may withdraw from studying any course until the end of the tenth week of the start of registration for the autumn or spring semester (third week of the summer semester). This course is recorded in the student's academic record with a grade of W "withdrawn", provided that the student has not exceeded the percentage of absence prescribed before withdrawal, provided that the withdrawal does not violate the academic load stipulated in Article [13].
4. Re-registration

The student is allowed to re-register in the study course in which he previously obtained an estimate of **F**, and he is allowed to attend the course and repeat the exam in accordance with the financial regulations that specify that, where the maximum allowed estimate is **B +**.

5. Elective Courses

In case that the student registers an elective course and fails and registers the same course again, the student gets the maximum grade of B +, while in the case of changing the elective course, the student gets the newly obtained degree.

Article [16]: Projects

1. Students prepare 2-3 projects in specific topics related to local industries and service to the surrounding community, to be determined by the Academic Council and during the last two academic years according to what is found in the special tables of the program curricula, and under the supervision of faculty members who to prepare, supervise and discuss projects.
2. The last project, called the Graduation Project, is prepared in the last semester, culminating in what the student has studied during the university years.
3. It is permissible that the Academic Council decide to allocate an additional period for the graduation project that begins after the completion of the last semester exam for a period of one month, and at the end of the period allocated to any of the projects the student submits a scientific report on the subject of the project and discusses it.

4. The student cannot obtain a bachelor's degree unless he successfully performs all the prescribed projects.

Article [17]: Practical and Field Training

The program includes a training system during the summer vacation for students transferred to levels 200, 300 and 400 and under the supervision of faculty members, as follows:

1. **Practical Training**: students transferred to level 200 will perform a practical training within the faculty or in specialized training centers and units within the faculty for a period of two weeks with a total number of hours of not less than 60 hours. The student should get a practical training completion certificate.
2. **Field Training**: students transferred to level 300 and those to level 400 perform field training within specialized sectors outside the faculty for a period of four weeks with a total number of hours of at least 120 hours. The student must obtain a certificate from the training authority stating his attendance and obtained the required experience.
3. The faculty is responsible for obtaining training opportunities for students, and students may get training opportunities for themselves, but after faculty council approval is obtained.
4. It is permissible to train students abroad based upon the program academic council approval. The student does not obtain a bachelor's degree unless he has successfully completed both practical and field training.
5. In all training cases, the student is given a Pass/Fail estimate only and his grade is not added to the total grade, but a Pass grade is required to obtain the course degree. The student who reaches level 400 without successfully completing his training can repeat the training any number of times until he passes the training.

The college should provide training opportunities for students in each major through cooperation protocols with companies or through its industrial advisory board.

Article [18]: Optional Courses

The student is not allowed to register at any of the elective courses unless he is at the planned level and to achieve all the requirements of the pre-requisites, and in all cases the academic advisor must review the registration of the students and remove any wrong registration.

Article [19]: Courses Registration Synchronization

Fourth level students and students subject to dismissal can register a course in conjunction with the previous prerequisite for the course after obtaining the approval of the program academic council if the following conditions are met:

1. The student has previously studied this prerequisite and received an **F** grade.
2. This registration does not violate the registration rules according to the GPA.

Article [20]: The Evaluation System

1. Each course is evaluated from (100) one hundred marks.
2. The student is evaluated in theoretical and practical courses based upon the following elements:

A. In the case of decisions that include only a theoretical study, the evaluation is as follows:

Table (4) Distribution of degrees for courses that include theoretical study only

Evaluation		Degree
Semester works	Mid-term exam	20%
	Short exams	30%
	Assignments (report)	
	Presentation and discussions	
Semester Exam (Written)		50%

B. In the case of study courses that include a theoretical and practical study, the evaluation is as follows:

Table (5) Distribution **of degrees for courses that include theoretical and practical study**

Evaluation		Degree
Semester works	Mid-term exam	20%
	Short exams	20%
	Assignments (report)	
	Presentation and discussions	
Practical Exam		10%
Semester Exam (Written)		50%

C. In the case of the Project Course, 50% of the degree is allocated to periodic follow-up, 50% for oral discussion.

D. For a student to succeed in any course, he or she must obtain at least 60% of the total score and must have obtained at least 40% of the final written examination score.

Article [21]: Degrees and Grades Digital and Symbolic Significance

A. The degrees obtained by the student in each course are estimated as shown in the following table:

Table (6) Table of numerical and symbolic implications of degrees and grades

The Student's Obtained %	Equivalent Degrees Range					Points No	Grade
From 97% or more	97	98	99	100	--	4,00	A+
93% to less than 97%	**93**	**94**	**95**	**96**	**—**	**4.00**	**A**
89% to less than 93%	**89**	**90**	**91**	**92**	**—**	**3.70**	**A-**
84% to less than 89%	**84**	**85**	**86**	**87**	**88**	**3.30**	**B+**
80% to less than 84%	**80**	**81**	**82**	**83**	**—**	**3.00**	**B**
76% to less than 80%	**76**	**77**	**78**	**79**	**—**	**2.70**	**B-**
73% to less than 76%	**73**	**74**	**75**	**—**	**—**	**2.30**	**C+**
70% to less than 73%	**70**	**71**	**72**	**—**	**—**	**2.0**	**C**
67% to less than 70%	**67**	**68**	**69**	**—**	**—**	**1.7**	**C-**
64% to less than 67%	**64**	**65**	**66**	**—**	**—**	**1.3**	**D+**
60% to less than 64%	**60**	**61**	**62**	**63**	**—**	**1.0**	**D**
Less than 60%						**0.0**	**F**

B. The course grade is calculated by multiplying the number of credit hours for the course by the number of assessment points (according to Table 6) that the student obtained in this course.
C. The following grades do not fall within the calculation of the average estimate, Table No. (7).

Table (7): Grades Completion

W	Formal Drop out
AU	listener
I	Incomplete
F	Unsuccessful
P	successful

a. Semester GPA:

For each course, the total score of the course is equal to the multiplication of both the number of credit hours of the course and the number of course points.
The semester average = the total points for the courses in which the student scored in the semester divided by the number of credit hours for these courses.

$$Semester\ GPA = \frac{Numberof Points}{NumberofGraded\ Hours} = \frac{\sum_{i=1}^{N} Grade_i \times Hours_i}{\sum_{i=1}^{N} Hours_i}$$

b. Cumulative GPA

The GPA is calculated as follows:
GPA = the sum of the points for the courses divided by the total number of hours for the courses

$$Comulative\ GPA = \frac{Number\ of\ Points}{Number\ of\ Graded\ Hours} = \frac{\sum_{i=1}^{N} Grade_i \times Hours_i}{\sum_{i=1}^{N} Hours_i}$$

c. Total Cumulative Calculation

The total cumulative is calculated as follows for the number of N courses:
For each course the total equivalent of the course scores is calculated equal to the number of credit hours for the course multiplied by the course score.
Cumulative total percentage is equal to the equivalent of the course grades divided by the total number of hours for the courses:

$$Cumulated\ Marks\ \% = \frac{Equivelent\ Accumulated\ Marks}{Number\ of\ Graded\ Hours}$$

$$= \frac{\sum_{i=1}^{N} Mark_i \times Hours_i}{\sum_{i=1}^{N} Hours_i} \times 100$$

d. Requirements Condition are met

For enrollment in courses requiring other courses as pre-requisites, the student's grade in the pre-requisites should not be less than D.

Article [22]: Graduation Students Grades

The grades obtained by the student upon graduation are granted according to the following schedule:

Table (8) Estimates Granted upon Graduation fromthe Program with Credit Hours System

The student's obtained percentage	Equivalent Degrees Range	Estimate	Equivalent grade
97% or more	**4.00**	**A+**	Excellent
93% to less than 97%	**4.00**	**A**	
89% to less than 93%	**3.70**	**A^{-}**	
84% to less than 89%	**3.30**	**B^{+}**	Very good
80% to less than 84%	**3.00**	**B**	
76% to less than 80%	**2.70**	**B^{-}**	
73% to less than 76%	**2.30**	**C^{+}**	Good
70% to less than 73%	**2.0**	**C**	

Article [23]: Honors Grade

1. Mansoura University grants a certificate of excellence to students who have obtained an average rating of 3.6 or more in previous semesters, provided that they have not failed any course during the study, and this distinction is recorded in the student's academic record.
2. Upon graduation, the student is awarded the honor degree if he obtains an average grade of 3.3 or more in all major semesters without failing any course.

Article [24]: Grades Statement

Students who obtain a degree or who drop out from the program have the right to obtain a statement of grades for their academic record, and this statement cannot be obtained during the period of exams, registration, or the date of graduation, and grades data are not given when tuition fees are not paid.

Article [25]: Academic Warning, Transferring and Dismissals

1. The student is warned academically if he obtains a GPA of less than 2 at the end of the second semester of his enrollment in the study or any other semester after that.
2. The student who is academically warned is placed under academic supervision and is not allowed to register more than 12 credit hours, and the monitoring is stopped if the GPA improves and exceeds the GPA 2.
3. A student who is academically dismissed shall be dismissed from credit hour programs if his cumulative GPA falls below 2.00 for six consecutive main semesters.
4. If the student does not meet the requirements for graduation during the maximum period of study, which is ten years, he will be dismissed.
5. The Faculty Council may consider the possibility of granting a student, subject to dismissal due to his inability to raise his cumulative GPA to at least 2.00 at least, one and last chance of two main semesters to raise his cumulative GPA to 2.00 and fulfil graduation requirements, if he has at least successfully completed 80% of the credit hours required for graduation.
6. A student who registers for 17 or more credit hours is considered a regular student, and the student's position in the study is defined according to Table No. (9).

Table (9):The Student's Position Based upon the Number of Credit Hours Passed

Academic level	Defining the student's Place in the study system	The number of credit hours the student has successfully passed	
		<	>=
1	**Freshman**	**32**	**0**
2	**Sophomore**	**64**	**32**
3	**Junior**	**112**	**64**
4	**Senior**	**160**	**112**

Article [26]: Graduation and Obtaining the Degree

For the student to obtain a bachelor's degree:

1. The student must have completed at least 160 credit hours in all programs and 163 credit hours in the Building and Construction Engineering Programs in studying the courses with a grade of no less than **D**.
2. His average grade should not be less than C or more in the cumulative average, and this means that he will obtain at least a cumulative average of 2.00 / 4.00.
3. The student fulfills all program requirements.
4. Immediately after these conditions are fulfilled, the student's condition will be transferred to a graduate and he may not register any other courses under any of the above items.

Article [27]: Transferring Students -to and from- the Program System

After approval of the academic council for the program and the Mansoura University Council, it is permissible to transfer students to and from the program with the accredited engineering faculties provided that a clearing is made between the courses studied by the student and the courses that he must study and succeed in, and to complete the clearing process the degrees equivalent to the grades specified in the credit hour system are used as shown in Table (1). Table (10) is used to calculate grades when converting from the credit hour system to faculties that do not use the credit hour system.

Table (10): Equivalence of Estimates when Convertingfrom the Credit Hour System to the Two-Semester System

Credit Hour System		The Semester System	
Number of points	Estimate	Equivalent Estimate	Equivalent Percentage
4.00	**A +**	**Excellent**	**99%**
4.00	**A**		**95%**
3.70	**A-**		**91%**
3.30	**B+**	**Very Good**	**86%**
3.00	**B**		**82%**
2.70	**B-**	**Good**	**78%**
2.30	**C+**		**75%**
2.0	**C**		**72%**

1.7	**C-**	**Passed**	**69%**
1.3	**D+**		**66%**
1.0	**D**		**62%**
0.0	**F**	**Failed**	**Less than 60%**

Article [28]: Appointing Graduates of the Program as a Demonstrators (Teaching Assistants)

1. Teaching assistants from the graduates of the program are appointed via a decision from the University President upon the request of the Faculty Council in accordance with Article (**133**) of Law No. **49** of **1972** regarding the organization of universities and without violating the application of Articles **135** and **136** of the same law.
2. The Faculty Council distributes teaching assistants newly graduated from the programs to the faculty scientific departments corresponding to their majors and based upon the previously presented annual plan of scientific departments.

Article [29]: The Listening System

It is permissible to accept listening students in any of the courses if there are vacant places provided that the listening student cannot perform the exam, or obtain credit hours for joining this course, or can he obtain an attendance statement for the course from the faculty. They may register late after completing the registration for regular students.

Article [30]: The Improvement System

1. The student is allowed to improve in (5) subjects to raise the GPA during the study period, provided that the student gets the last grade, and it is not permissible to drop out from the course after the end of the official period in which withdrawal is permitted without an academic impact (the fourth week of the main semesters). As the expiration of this period entails the removal of the first estimate.
2. If the student has completed his studies in the program and his GPA is less than 2, he may improve any of the previously studied subjects until he reaches the required minimum of the GPA.
3. The student may not improve a failed course.

Article [31]: Disciplinary Rules

Students who are enrolled in the program are subject to the disciplinary system outlined in the University Regulatory Law and its executive regulations.

Article [32]: Electronic Administration

The university designs or contracts with an information administration system for the program to automate the work of the program with a credit hour system. The following conditions are required in this program:

1. Course registration.
2. Adding and removing courses.
3. Academic Advising.

4. program administration work in achieving the rules governing the program.
5. Grades control work.
6. Study work and exams.
7. Financial benefits.
8. Student affairs work.
9. Statement of the situation.
10. Student performance reports.
11. Record the absence of students.
12. E-exams.
13. Communication with students

Taking into account the preservation of confidentiality of data and its recall, ease of use for the student, faculty member and administrative team, and the availability of technical support.

Article [33]: Incomplete Courses

If a student request not to attend the final exam where he shows compulsive reasons why not to attend, is accepted by the academic council of the program and the faculty council, within two days at most from the final examination date, the course is considered incomplete with an estimate (I) in this course provided that he has obtained at least 60% of the coursework degree or he has been deprived of entering the final exam, in which case he will have the opportunity to take the final exam in the next semester and at the date determined by the faculty council, which is usually in the first week of the next academic semester directly. The degree of the semester work obtained by the student during the semester is added to the final theoretical exam degree which is conducted by the student.

Article [34]: Appeals for the Results of the Courses

The student can appeal to review the grades of the course within a week of announcing the result, after paying the fees determined in accordance with the overall regulations associated with this matter.

Article [35]: Implementing the Provisions of the Law Regulating Universities

The provisions of these regulations apply from the academic year following the date of their issuance to new students admitted to the faculty at the level (000) of those programs, and these regulations do not apply retroactively to any student in the faculty.

Article [36]: General Rules

1. The rules of the Universities Regulatory Law, its executive regulations, the internal regulations of the college, and other university regulations are applied in the absence of a text in these regulations.
2. The student is subject to the general system of the university and the college, and the rules of dismissal from the university, opportunities for re-enrollment, acceptable excuses for not taking the exam, stopping the academic registration, and all the rules, laws and regulations regarding student discipline as stipulated in the Universities Organization Law and its implementing regulations are applied to him/her.

3. The faculty is permitted to add to the list of elective courses with the approval of the Faculty Board and without the need to return to the Engineering Sector Committee.
4. The Faculty Council agrees to change the scientific content of the course in a manner that does not conflict with the course name and objectives.

Article [37]: Transitional Rules

1. The provisions of these regulations shall be applied to new preparatory year students and those covered by the decisions of the University Council that regulate the enrollment of students in the credit hour programs, starting from the academic year following the issuance of the ministerial decision related to this regulation, and then applied sequentially to the remaining academic years.
2. When the provisions of these regulations are applied to any academic year, work shall apply to the remaining students for repetition, re-enrollment and applicants for the examination from abroad, and the College Board shall adjust the status of these students in the light of this regulation and the previous one.

4. The Courses of Renewable and Sustainable Energy Engineering Program by Credit hours system

4.1 Course Coding System

Courses are coded according to the following figure (Fig. 1). The course is related to the scientific department that offers it. The first part of the course code is the code of the scientific department. The second part consists of three numbers, the first of which represents the level, while the second number represents the exact specialization number within the scientific department, and the third number reflects a series of courses in the specialization of the same level. Not all of these letters indicate the majors in which the degree is given, some of which represent university requirements, engineering requirements, or specialized courses.

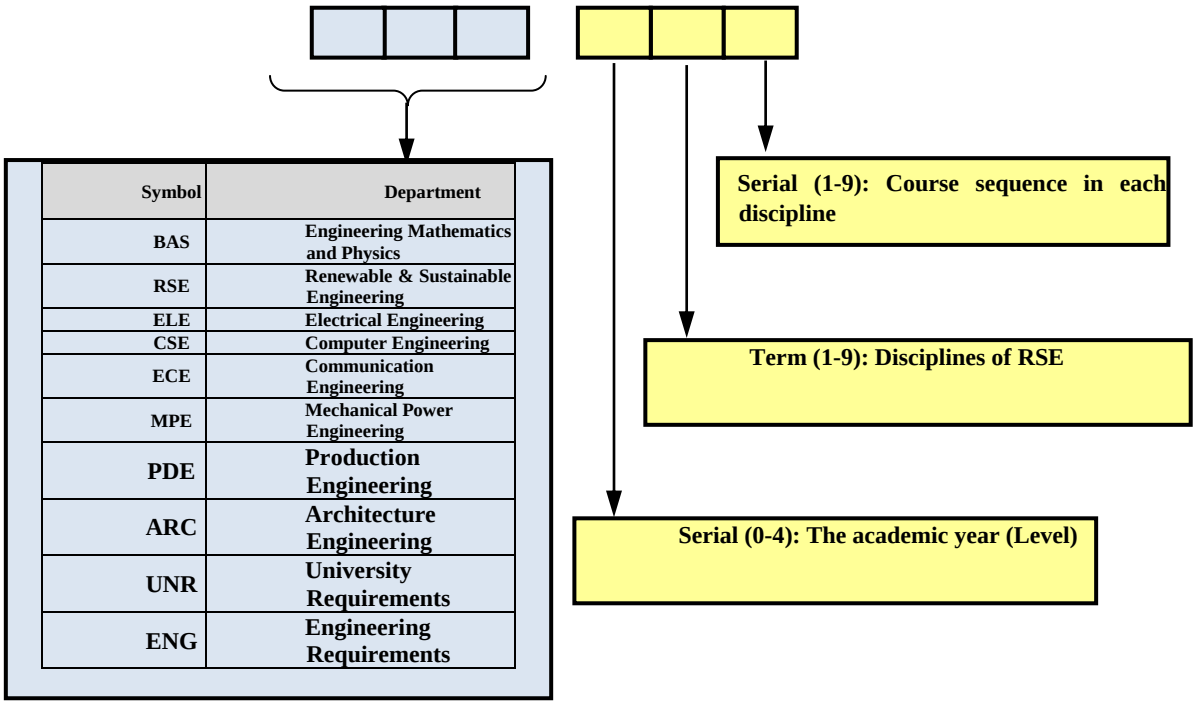

Fig. 1. Course Coding System

4.2 The Program Plan Description

The structure of the renewable and sustainable energy engineering program consists of 160 credit hours distributed as follows:

a. University Requirements:

The main purpose of university education is not only to prepare students for successful careers but also to provide them with the knowledge and skills necessary to develop a rational and successful personal identity. In addition, Mansoura University assists students in gaining an appreciation of the natural and cultural environments in which they live and their roles in society and community services. The university's requirements for bachelor's programs consist of 13 credit hours (8.12% of the total 160 credit hours), which are met by completing six (6) courses that are reflected in table 11.

Table 11: University Requirements: 13 credits (8.12% of 160 credits)

Code	**Course name**	**Credit Hr.**
UNR061	English language	2
UNR281	Law and Human Rights	2
UNR241	Communication and Presentation Skills	2
UNR461	Ethics and Morals of the Profession	2
UNR364	Environmental impact Assessment	2
CSE042	Introduction to Computer Systems	3

b. Faculty Requirements:

The faculty requirements provide students with the knowledge and skills necessary to develop a successful engineer. Common college requirements are applied in all credit hour programs. The standard requirement of faculty courses includes basic knowledge courses for all engineering graduates such as mathematics, physics, mechanics, engineering drawing, design, manufacturing, and chemistry. The faculty requirements for the Renewable and Sustainable Energy Engineering program consist of 44 credit hours (27.5% of the total 160 credit hours), which are completed by completing sixteen (16) mandatory courses, as listed in Table 12.

Table 12: Faculty Requirements: 44 Credits (27.5 % of 160 credits)

Code	**Course name**	**Credit Hr.**
BAS011	Mathematics (1)	3
BAS021	Mechanics (1)	3
BAS031	Physics (1)	3

BAS041	Basics of Engineering Chemistry	3
PDE051	Engineering Drawing	3
BAS012	Mathematics (2)	3
BAS022	Mechanics (2)	3
BAS032	Physics (2)	3
PDE052	Principles of Manufacturing Engineering	3
BAS113	Mathematics (3)	3
BAS114	Mathematics (4)	3
ENG111	Technical Reports Writing	2
BAS115	Statistics and Probability Theory	2
ELE141	Electrochemical Properties of Materials	2
ECE211	Electronic Circuits and Integrated Systems	3
ENG412	Project management	2

c. Major and Minor Requirements for RSEE

The major and minor requirements in the renewable and sustainable energy engineering program consist of 103 credit hours (64.38% of a total of 160 credit hours), which are fulfilled by completing 30 compulsory courses equivalent to 85 credit hours, 4 elective courses equivalent to 12 credit hours and field training and graduation projects equivalent to 6 credit hours as shown in the following tables.

Table 13: Major and Minor Requirements (85 credits plus 12 credits elective courses)

Code	Course name	Credit Hr.
ELE111	Electric circuits	3
MPE121	Fluid Mechanics	3
MPE111	Thermodynamics	3
RSE101	Measurement and Instrumentation	3
ELE112	Basics of power systems	3
RSE102	Computer applications in energy	2
RSE103	Introduction to engineering design	3
ELE221	Electric Machines (1)	3
MPE222	Hydraulic Machines	3
CSE253	Automatic Control Systems	3
RSE204	Introduction to energy conversion	2
PDE232	Materials Strength & Stresses Analysis	3
MPE212	Solar energy thermal applications	3
MPE213	Heat transfer	3
RSE205	Modeling of dynamic systems	3
ELE231	Photovoltaic Systems	3
MPE314	Mechanical power stations	3
ELE322	Electric machines (2)	3
MPE323	Automatic control equipment	3
MPE313	Refrigeration and Air Conditioning	3
RSE308	Introduction to Wind Energy	3
RSE309	Energy Storage systems	3

ELE333	Power electronics and applications	3
RSE311	Energy Policies and Economics	2
ARC311	Smart Buildings	2
RSE413	Design of energy systems	3
ELE413	Power System Analysis	3
RSE415	Introduction to Biomass Energy	2
ELE414	Power System control	3
ELE415	Power system protection	3

Table13 (continue): Elective Courses (12 Credits)

Code	Course name	Credit Hr.
ELE324	Electrical Traction	3
ELE334	Applications of PLC/SCADA in power system	3
ELE314	Hybrid Energy Systems	3
MPE315	Elective Course (1) in Mechanical Engineering	3
ELE325	Electrical Motor Drives	3
ELE335	Low Voltage Distribution	3
ELE315	Smart grid technologies	3
MPE316	Elective Course (2) in Mechanical Engineering	3
ELE421	Electrical vehicle technology	3
PWE411	Wastewater treatment technologies	3
ELE418	Utilization of Electrical Energy	3
ELE416	Energy Auditing and Conservation	3
MPE411	Elective Course (3) in Mechanical Engineering	3
ELE422	Energy systems and electrical vehicles	3
ELE419	Illumination Technology	3
ELE417	Energy markets	3
MPE412	Elective Course (4) in Mechanical Engineering	3

d: Project and Practical and Field Training

Table 14: Projects and Practical Training (6 credits)

Code	Course name	Credit Hr.
RSE206	Industrial training (1) in energy engineering	--
RSE312	Industrial training (2) in energy engineering	--
RSE416	Project (1) in Energy Engineering	3
RSE417	Project (2) in Energy Engineering	3

4.3. Courses Distributions

Level 000

First semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
BAS011	Mathematics (1)	3	2	2		4	8	20	30	--	50	100	
BAS021	Mechanics (1)	3	2	2		4	8	20	30	--	50	100	
BAS031	Physics (1)	3	2	1	1.5	4.5	9	20	20	10	50	100	
BAS041	Basics of Engineering Chemistry	3	2	1	1.5	4.5	9	20	20	10	50	100	
PDE051	Engineering Drawing	3	2	2		6	10	20	30	--	50	100	
UNR061	English Language	2	1	2		2	5	20	30	--	50	100	
Total		17	11	10	3	25	49					600	
Total Contact hours = 24 hrs/weekTotal SWL = 49 hrs/week													

Second semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
BAS012	Mathematics (2)	3	2	2	--	4	8	20	30	--	50	100	BAS011
BAS022	Mechanics (2)	3	2	2	--	4	8	20	30	--	50	100	BAS021
BAS032	Physics (2)	3	2	1	1.5	4.5	9	20	20	10	50	100	----------
CSE042	Introduction to Computer Systems	3	2	1	1.5	4.5	9	20	20	10	50	100	----------
PDE052	Principles of Manufacturing Engineering	3	2	--	3	3	8	20	20	10	50	100	----------
Total		15	10	6	6	20	42					500	
Total Contact hours = 22 hrs/weekTotal SWL = 42 hrs/week													

Level 100:

Third Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
BAS 113	Mathematics3	3	2	2	--	4	8	20	30	--	50	100	BAS012
BAS115	Probability Theory and Statistics	2	1	2	--	2	5	20	30	--	50	100	BAS012
ELE141	Electrochemical properties of materials	2	2	--	--	5	7	20	30	--	50	100	-------
ELE111	Electric Circuits	3	2	2	--	4	8	20	30		50	100	BAS032
MPE121	Fluid Mechanics	3	2	1	1	4	8	20	20	10	50	100	BAS031
MPE111	Thermodynamics	3	2	2	--	4	8	20	30	--	50	100	BAS041
Total		16	11	9	1	23	44					600	
Total Contact hours = 21hrs/weekTotal SWL = 44 hrs/week													

Fourth Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
BAS 114	Mathematics (4)	3	2	2	--	4	8	20	30	--	50	100	BAS113
ENG111	Technical Report Writing	2	1	2	--	3	6	20	30	--	50	100	UNR 061
RSE103	Introduction to Engineering Design	3	2	2	--	4	8	20	30	--	50	100	----
RSE102	Computer applications in energy	2	1	1	1.5	2.5	6	20	20	10	50	100	CSE051
ELE112	Basics of Electrical power systems	3	2	2	--	5	9	20	30	--	50	100	ELE111
RSE101	Measurement and Instrumentation	3	2	1	1.5	4.5	9	20	20	10	50	100	--------
Total		16	10	10	3	23	46					600	
Total Contact hours = 23 hrs/week Total SWL = 46 hrs/week													

Level 200:

Fifth Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
ECE211	Electronic circuits and integrated systems	3	2	2	--	5	9	20	30	--	50	100	-------
ELE221	Electric Machines (1)	3	2	1	1.5	4.5	9	20	20	10	50	100	ELE111
MPE222	Hydraulic Machines	3	2	2	--	5	9	20	30	-	50	100	MPE121
CSE253	Automatic Control Systems	3	2	2	--	4	8	20	30	-	50	100	BAS114
RSE204	Introduction to Energy Conversion	2	2	-	--	4	6	20	30	-	50	100	ELE112
UNR241	Communication and Presentation Skills	2	1	2	--	1	4	20	30	--	50	100	-------
Total		16	11	9	1.5	23.5	45					600	
Total Contact hours = 21.5 hrs/week Total SWL = 45 hrs/week													

Sixth Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
PDE232	Materials Strength & Stresses Analysis	3	2	1	1	4	8	20	20	10	50	100	----------
MPE212	Solar energy thermal applications	3	2	1	1.5	3.5	8	20	20	10	50	100	RSE204
MPE213	Heat Transfer	3	2	2	-	4	8	20	30	-	50	100	---------
RSE205	Modeling of dynamic systems	3	2	-	3	3	8	20	20	10	50	100	RSE102
ELE231	Photovoltaic Systems	3	2	1	1.5	4.5	9	20	20	10	50	100	ELE141
UNR 281	Law and Human Rights	2	2	0	0	2	4	20	30	-	50	100	----------
RSE206	Industrial training (1) in energy engineering	-	-	-	-	3	3	-	-	-	-	-	------
Total		17	12	5	7	24	48					600	
Total Contact hours = 24 hrs/weekTotal SWL = 48 hrs/week													

Level 300:

Seventh semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
MPE314	Mechanical Power Stations	3	2	2	--	5	9	20	30	--	50	100	MPE111
ELE322	Electric Machines (2)	3	2	1	1.5	4.5	9	20	20	10	50	100	ELE221
MPE323	Automatic control equipment	3	2	2	--	5	9	20	30	-	50	100	MPE121
MPE313	Refrigeration and Air Conditioning Systems	3	2	2	--	4	8	20	30	-	50	100	MPE213
Elective	Elective course (1)	3	2	1	1.5	4.5	9	20	20	10	50	100	-------
UNR364	Environmental impact Assessment	2	2	-	--	3	5	20	30	--	50	100	------
Total		17	12	8	3	26	49					600	
Total Contact hours = 23 hrs/weekTotal SWL = 49 hrs/week													

Eighth Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
RSE308	Introduction to wind energy	3	2	1	1.5	3.5	8	20	20	10	50	100	MPE121
RSE309	Energy storage systems	3	2	2	--	4	8	20	30	-	50	100	RSE204
ELE333	Power electronics and applications	3	2	1	1.5	3.5	8	20	20	10	50	100	ECE211
Elective	Elective course (2)	3	2	1	1.5	3.5	8	20	20	10	50	100	Depends on course
RSE311	Energy Policies and Economics	2	2	-	--	3	5	20	30	-	50	100	RSE204
ARC311	Smart buildings	2	2		--	3	5	20	30	--	50	100	RSE204
RSE312	Industrial training (2) in energy engineering	-	-	-	-	8	8	-	-	-	-	-	-----
Total		16	12	5	4.5	28.5	50					600	
Total Contact hours = 21.5 hrs/weekTotal SWL = 50 hrs/week													

Level 400:

Ninth semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
Elective	Elective course (3)	3	2	1	1.5	4.5	9	20	20	10	50	100	Depends on course
RSE413	Design of energy systems	3	2	1	1.5	4.5	9	20	20	10	50	100	RSE204-RSE311
ELE413	Power system analysis	3	2	2	--	5	9	20	30	-	50	100	ELE112
ENG412	Project management	2	2	-	--	4	6	20	30	-	50	100	-------
RSE415	Introduction to Biomass Energy	2	2	-	--	6	8	20	30	-	50	100	BAS041
RSE416	Project (1) in Energy Engineering	3	1	2	3	2	8	20	20	10	50	100	Level 400
Total		16	11	6	6	26	49					600	
Total Contact hours = 21.5 hrs/weekTotal SWL = 50 hrs/week													

Tenth Semester

Course Coding		No. of Hrs/week						Course grades					Prerequisites
Course Code	Course Title	Credits	lect.	Tut.	Lab.	Free work	SWL	midterm	Sem. work	lab	written	total	
ELE414	Power System control	3	2	2	--	5	9	20	30	--	50	100	ELE413
ELE415	Power system protection	3	2	1	1.5	4.5	9	20	20	10	50	100	ELE413
UNR461	Ethics and Morals of the Profession	2	2	2	--	2	6	20	30	-	50	100	UNR281
Elective	Elective course (4)	3	2	1	1.5	4.5	9	20	20	10	50	100	Depends on course
RSE417	Project (2) in Energy Engineering	3	1	2	3	6	12	20	20	10	50	100	Level 400
Total		14	9	8	6	22	45					500	
Total Contact hours = 23 hrs/weekTotal SWL = 45 hrs/week													