University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form no. (12): **Course Specification**

1- Course Data

Course Code: **ME 524**	Course Title: **Renewable Energy Resources**		Academic Year/Level: **5th** year / **9th** semester
Specialization: **Mechanical**	No. of Instructional Units	Lecture	Practical
	3 credits	**2 hrs.**	**2 hrs.**

2- Course Aim

- To develop the student ability to assess the current energy situation, need for renewable energy sources & to understand and their current status of development.
-
- Studying the different types of renewable energy sources

3- Intended Learning Outcomes

a- Knowledge and Understanding	**Through knowledge and understanding, students will be able to:** a.4) Principles of design including elements design, process and/or a system related to specific disciplines. a.5) Methodologies of solving engineering problems, data collection and interpretation a.8) Current engineering technologies as related to disciplines a.12) Contemporary Engineering Topics a.p.3) Fluid power systems a.p.6) Mechanical power and energy engineering contemporary issues
b- Intellectual Skills	**Through intellectual skills, students will be able to:** b.4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources. b.5) Assess and evaluate the characteristics and performance of components, systems and processes b.p.1) Evaluate mechanical power and energy engineering designs, processes and performances and Propose improvements b.p.3) Evaluate the power losses in the fluid transmission lines and networks
c- Professional Skills	**Through professional and practical skills, students will be able to:** c.6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs. c.p.4) Describe the basic Thermal and fluid processes mathematically and use the computer software For their simulation and analysis

d- General Skills	**Through general and transferable skills, students will be able to:** d.6) Effectively manage tasks, time, and resources

4- Course Content

Week No.1	The current energy resources
Week No.2	Environmental Impact of Energy production
Week No.3	Need for renewable resources
Week No.4	Solar Energy: photovoltaic cells
Week No.5	Solar Energy: thermal energy production
Week No.6	Solar Energy: thermal energy production
Week No.7	Wind Energy-7th week evaluation / 7th week evaluation
Week No.8	Wind Energy
Week No.9	Hydropower
Week No.10	Wave and Tidal Energy
Week No.11	Ocean Thermal Energy Conversion
Week No.12	Geothermal Energy-12th week evaluation / 12^{th} week evaluation
Week No.13	Nuclear Energy.
Week No.14	Biomass as source of energy
Week No.15	Environmental Impact of Renewable Energy
Week No.16	Final exam

5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

Engineering Requirements and Design Considerations in college Buildings and its Leading Passages

- The design of college buildings and pedestrian passages leading to it are sloppy to allow the transportation of the handicapped;
- Doors are wide enough to let wheel chairs pass through easily and conveniently.

- Lifts are provided for movement between floors.
- Doors are made from light weight materials to make it easy for the handicapped suffering from weakness in limb muscles or those handicapped using prosthetic limbs to deal with them with the least muscular effort.
- Class floors are made from non-slippery materials to prevent falls on the part of the handicapped.
- Sudden changes in the floor level are prevented.

Design Considerations of the Classes

- Class boards are placed at 60 cm high to allow wheeled chair users or those suffering from limited arm mobility use them.
- Enough spaces are left between seats and benches to prevent hindering the movement of wheeled chairs between them.
- Handicapped students sit among normal people in class to be able to interact with them. Nevertheless, in urgent cases according to the nature of the disability, the handicapped students sit in fixed suitable places whether at the front or the back of the class.
- Handicapped students sit close to the main exits of the class to be able to evacuate in case of emergencies.

Academic Support:

- The general academic advisor appoints an academic supervisor for handicapped students.
- Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes. 2-Class Activities (Reports, Discussions, ------) to assess The Intellectual Skills.	
b- Schedule:	Assessment 1 Assessment 2 Assessment 3 Assessment 4	7th Week Assessment 12th Week Assessment Continuous Assessments 16th Week Final Written Exam
c- Weighing of Assessment	7th Week Evaluation 12th Week Evaluation Final-term Examination Oral Examination Practical Examination Semester Work Total	30 % 20 % 40 % 00 % 00 % 10 % 100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	• Lecture notes
c- Recommended Books	•
d- Periodicals, Web Sites, etc.	N/A

Course Instructor: Prof. Mohamed Teamah **Head of Department: Prof. El-Sayed Saber**

Program Manager: Prof. El-Sayed Saber

Dean of College of Engineering and Technology of AASTMT
Name: **Prof. Moustafa Hussein Aly**
Signature:

Executive Manager of Quality Assurance Center of AASTMT
Name: **Prof. Aziz Ezzat**
Signature: