



**Jordan University of Science and Technology**  
**Faculty of Science & Arts**  
**Physics Department**

PHY395 Solar And Renewable Energy

Summer Semester 2021-2022

**Course Catalog**

3 Credit Hours. Renewable Energy 395 provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The class will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro power. Energy conservation methods will be emphasized.

**Text Book**

<b>Title</b>	RENEWABLE ENERGY A First Course
<b>Author(s)</b>	Robert Ehrlich
<b>Edition</b>	1st Edition
<b>Short Name</b>	1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
2	Renewable Energy Resources	John Twidell and Tony Weir	3rd Edition	
3	Fundamentals of Renewable Energy Processes	Aldo Vieira da Rosa	1st Edition	
4	HANDBOOK ON RENEWABLE ENERGY SOURCES	www.ener-supply.eu	2nd Edition	
5	Physics of Solar Energy	C. Julian Chen	1st Edition	

6	Reference: <a href="http://zebu.uoregon.edu/2001/phys162.html">http://zebu.uoregon.edu/2001/phys162.html</a> & Materials supplied by the instructor	University of Oregon	6th Edition	
7	, Energy Systems Engineering: Evaluation and Implementation	Francis M. Vanek, Louis D. Albright, and Largus T. Angenent	3rd Edition	
8	Renewable Energy: Power for a Sustainable Future	Godfrey Boyle (editor),	3rd Edition	

Instructor	
Name	<b>Dr. Adnan Shariah</b>
Office Location	PH3 L1
Office Hours	Sun : 13:00 - 14:30 Mon : 13:00 - 14:30 Tue : 13:00 - 14:30 Wed : 13:00 - 14:30
Email	shariah@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: M3305

Prerequisites		
Line Number	Course Name	Prerequisite Type
922110	PHY211 Properties Of Matter And Heat	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to Renewable Energy	From <b>2</b>
Week 1	Energy, sustainability & the environment	From <b>1</b>
Week 2	Solar Radiation	From <b>1</b> , From <b>2</b> , From <b>3</b> , From <b>5</b>
Week 2	Solar Thermal	From <b>1</b> , From <b>2</b> , From <b>5</b>
Week 2	solar thermal	From <b>1</b> , From <b>2</b> , From <b>5</b>

Week 3	Solar - Concentrators	From 2
Week 3	Solar - PV	From 1, From 2, From 3, From 5
Week 4	Solar - PV	From 1, From 2, From 3, From 5
Week 4	Solar PV	From 1, From 2, From 3, From 5
Week 5	Wind Energy	From 1, From 2, From 3, From 6
Week 5	Wind Energy	From 1, From 2
Week 5	Geothermal Energy	From 1, From 2
Week 6	Biomass Energy	From 1, From 2
Week 6	Hydro power	From 1, From 2, From 4
Week 6	Energy from Oceans	From 2, From 3
Week 7	Hydrogen Energy	From 3

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
renewable Energy sources [31, 32, 25]	10%	quizzes, Final
Solar energy [31, 32, 25]	30%	quizzes, Final
Wind Energy [31, 32, 25]	20%	quizzes, Midterm, Final
Hydro power energy [31, 32, 25]	10%	quizzes, Midterm, Final
Biomass energy [31, 32, 25]	10%	quizzes, Midterm, Final
Ocean Energy [31, 32, 25]	10%	Midterm, Final

Geothermal Energy [31, 32, 25]	10%	Midterm, Final
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Relationship to Program Student Outcomes (Out of 100%)					
1	2	3	4	5	6
37.5	37.5			25	

Evaluation	
Assessment Tool	Weight
quizzes	25%
Midterm	25%
Final	50%

Policy	
Student Behavior	Student Behavior: As students in a technical program are preparing for a professional career, all students are expected to conduct themselves, in both manner and dress, as professionals. Eating, drinking, or the consumption of any tobacco products is prohibited during class meetings (lecture hall, classroom, laboratory, or field). Doing so may result in the student's dismissal from that class period and will count as an unexcused absence. Cell phones, pagers, and similar devices must be turned off during the instruction time. Use of or disruption of class by these devices will result in the confiscation of the device by the instructor, and may result in the student's dismissal from that class period which will count as an unexcused absence. The confiscated device may be retrieved at University Police.
Attendance	Students are required to attend scheduled lectures, labs, and field trips; and to work on class and lab/field assignments as scheduled by the professor. Students are required to attend their scheduled sections for labs, lectures, and examinations (unless authorized by the professor). Since class sessions start on the hour, students are expected to be punctual. There will be no late entries once a class has begun. In this case, student's absence will be counted as unexcused and will receive a zero for any assignments due. If a student must leave class early during a regularly scheduled meeting, he/she must discuss reasons with the professor. If a student must miss a scheduled class meeting due to an acceptable, verifiable time conflict, he/she must resolve the time conflict prior to class. Students failing to call ahead or discuss absences prior to the class will be unexcused. If a student accumulates four unexcused absences, he/she will be given the option of dropping the course or receiving a failing grade for the semester.
Honesty Policy & Discipline (Due Process)	Honesty and integrity are major elements in professional behavior and are expected of each student. Any assignment (including those in electronic media) submitted by a student must be of the student's original authorship. Representation of another's work as his/her own shall constitute plagiarism. Cheating, in any form, is considered unacceptable behavior within all University courses. Students having academic problems should consult with their adviser or a college counselor. Instances of cheating will be dealt with in accordance to University policy. Standards of academic honesty and due process procedures for JUST are located in the Rules, Regulations & Expectations section of the student handbook.
Safety Guidelines	Certain class assignments may require the student to be absent from the professor's immediate supervision. Whether the student is under immediate supervision or not, safe conduct and safe use of equipment shall be the ultimate rule. Failure to comply with prudent safety practice and/or willful disregard for class participants and/or equipment may be cause for immediate dismissal from that particular class session by the professor.

STUDENTS WITH DISABILITIES	<b>STUDENTS WITH DISABILITIES</b> If you have a disability, (physical or psychological) and require reasonable accommodations to enable you to participate in this course, such as note-takers, readers, or extended time on exams and assignments, please contact the Physics Department Office, and also see me during the first two weeks of class to provide you with information and review appropriate arrangements for reasonable accommodations.
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