

Course Change Request

New Course Proposal

Date Submitted: 04/25/20 7:01 pm

Viewing: **PHYS 131 : Introduction to Renewable Energy**

Last edit: 04/27/20 4:22 pm

Changes proposed by: prubin

Programs
referencing this
course

[RNRG: Renewable Energy Interdisciplinary Minor](#)

Are you completing this form on someone else's behalf?

No

Effective Term: Fall 2021

Subject Code: PHYS - Physics

Course Number: 131

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Introduction to Renewable Energy

Banner Title: Intro Renewable Energy

Will section titles
vary by semester? No

In Workflow

1. **PHYS UG Committee**
2. **PHYS Chair**
3. **SC Curriculum Committee**
4. SC Associate Dean
5. Assoc Provost- Undergraduate
6. Registrar-Courses
7. Banner

Approval Path

1. 05/13/20 9:34 am
Philip Rubin
(prubin): Approved
for PHYS UG
Committee
2. 05/13/20 11:03 am
Paul So (paso):
Approved for PHYS
Chair

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3) **Max Allowable Credits:** 9

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(Course/Test Code	Min Grade/Score	Academic Level)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:

An overview of the renewable-energy field suitable for all students regardless of major. Topics include renewable-energy technologies, trends in the adoption of renewable energy, successful policy drivers, and environmental impacts.

Justification:

Foundation course for revised Renewable Energy minor. Relevant topic for students in all majors.

Does this course cover material which crosses into another department? Yes

Impacted Departments:

Department
AOES - Atmospheric, Oceanic, & Earth Sciences
ECON - Economics
ESP - Environmental Science & Policy
ME - Mechanical Engineering

Learning Outcomes:

Attach Syllabus

[syllabus-PHYS131.pdf](#)

Additional Attachments

Staffing:

Camelli, Cressman, Gliozzi, Weingartner

Relationship to Existing Programs:

Foundation course for Renewable Energy Minor

Relationship to Existing Courses:

Prerequisite for PHYS 411 (new course).

Additional Comments:

Reviewer Comments

PHYS 131: Introduction to Renewable Energy

Classes

Place: TBA

Time: TBA

Instructor

Camelli, Cressman, Gliozzi, or Weingartner

Office hours: TBA

Learning Outcomes

1. Develop a broad-based understanding of the renewable-energy field, including technologies, trends in the adoption of renewable energy, successful policy drivers, and environmental impacts.
2. Develop sufficient familiarity with the renewable-energy field to have a successful internship experience in the field, for students of all majors.

Methods of Instruction

This course offers a rich variety of instruction, including textbook readings, readings of recent reports from federal and international agencies, instructor lectures, guest lectures from top experts in renewable energy, and a field trip to a home and office powered by renewable energy.

Textbook

Required: “Energy for Sustainability: Foundations for Technology, Planning, and Policy” (2nd ed), John Randolph & Gilbert M. Masters (2018, Island Press)

Optional Supplemental text: “The Energy System: Technology, Economics, Markets, and Policy,” Travis Bradford (2018, MIT Press)

Course Schedule

1. Motivation for transition to renewable energy (ch 1, Bradford ch 1)
2. Overview of Conventional and Renewable Energy sources (ch 2)
** guest lecture: Solar Energy Foundation
3. Trends in Renewable Energy (ch 3)
** also latest data from the Energy Information Administration, Federal Energy Regulatory Commission, and International Energy Agency
4. Introduction to Economic and Environmental Analysis of Energy Systems (ch 5)
** exam 1
5. Renewable Energy and Energy Efficiency for Buildings (ch 6, 7, 8)
** field trip to off-the-grid house and office building in Arlington, VA

6. Electric Power Systems: Centralized and Distributed (ch 9, 10)
7. Large-Scale Renewables (ch 12, Bradford ch 9 and 10)
8. Sustainable Transportation: Efficient Vehicles and Renewable Energy (ch 13, 14)
** exam 2
9. Risk; Ecosystem Interactions (Bradford ch 20)
** guest lecture: Union of Concerned Scientists
10. Strategies for Market Transformation to Renewable Energy (ch 16)
11. Energy Policy: Federal and International (ch 17)
12. Energy Policy: State and Local (ch 18)

Each week, a list of local events related to renewable energy (both in-person and virtual) will be distributed (from the SUN DAY Campaign). You will be required to attend one of these.

Evaluation

2 in-class exams: $2 \times 20\% = 40\%$

final exam: 40%

4 short reaction papers relating content of special events (2 guest speakers, one local event, one field trip) to what you've learned in class: $4 \times 5\% = 20\%$

Final course grades will be assigned based on numerical course grades as follows:
90%–100% A , 80%–90% B , 70%–80% C , 60%–70% D , <60% F

General Policies

Academic Integrity: Any instance of cheating or plagiarism is a violation of the Honor Code Pledge and will result in a score of zero on the exam or paper and referral to the Honor Committee. The website for the Office of Academic Integrity is <https://oai.gmu.edu/>.

Disability Accommodations: If you have a disability and need academic accommodations, please contact Disability Services. Their website is <https://ds.gmu.edu/>. All academic accommodations must be arranged through Disability Services.

Diversity and Inclusion: We seek to create a learning environment that fosters respect for people across identities. We welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own. Mason's non-discrimination policy is at <https://universitypolicy.gmu.edu/policies/non-discrimination-policy/>.

Communication: Students must use their MasonLive email account to receive important University information, including communications related to this course. I will not respond to messages sent from

or send messages to a non-Mason email address.

University Resources

Learning Services <https://learningservices.gmu.edu/>

Student Support and Advocacy Center <https://ssac.gmu.edu/>

Counseling and Psychological Services <https://caps.gmu.edu/>