EMAN 204 - Energy Resources

Course Outline & Information

It is assumed you have competency in mathematics equivalent to or greater than a good high school student.

A detailed list of Paper Contents and Learning outcomes for the paper can be found at www.otago.ac.nz/physics/study/undergraduate/index.html?papercode=EMAN204

Lecturer:

Arjan Abeynaike Room 521 arjan.abeynaike@otago.ac.nz Office hour: Fri 2-3pm

Course Overview:

1. Energy Fundamentals (2 lectures)
2. Flow Energy - Wind, Hydro, Wave, Tidal (5 Lectures)
3. Thermal Energy-Solar thermal, Geothermal, Nuclear (4 Lectures)
4. Chemical Energy-Biomass, Coal, Oil, Gas (6 Lectures)
5. Solar PV/Integration/Storage/End use (5 Lectures);
6. Decarbonizing Aotearoa's Energy System (2 Lectures)

Timetable:

Lectures 11.00am-11.50am, Monday and Friday (room 314)

Workshops 2.00pm-3.00pm, Every second Wednesday/Thursday depending on stream (room 311)

Laboratories 2.00pm-5.00pm, Every second Wednesday/Thursday depending on stream (Lab 123)

Detailed timetable showing due dates for assignments will be provided.

Textbooks:

Course textbook:

- *Renewable Energy: Power for a Sustainable Future (3rd ed), Godfrey Boyle*

Recommended reading

- *Sustainable Energy – without the hot air, David JC MacKay*
- *Energy Science: Principles, Technologies and Impacts (2nd ed), John Andrews and Nick Jelly*
- *Energy Systems and Sustainability: Power for a Sustainable Future, G. Boyle, B. Everett and J. Ramage*
- *Renewable Energy Resources, John Twidell and Tony Weir*

Student guide to EMAN 204

Lectures: Lectures will be given twice weekly. Lecture slides will be made available at least 1 day before the lecture for you to preview. There may also be associated reading material and it is recommended that you read this before and after the lecture.

You are expected to attend all lectures in person. Lectures will not be recorded or streamed as a matter of course. If you are unable to attend a lecture due to illness, please notify the lecturer straight away and arrangements will be made for you to access the lecture remotely.

Assignments: are set on the lectured material to cement learning. Assignments and project reports should be submitted via Blackboard as a PDF document. Any handwritten work should be scanned so that writing is clear and in focus. Late work is penalized and will not be accepted after 5 days beyond the deadline.

Workshops: provide an opportunity to practice the calculation and problem-solving skills required for the course. These are held in an environment where you can work together with other students and get staff assistance. The workshops are assessed via the completion of a set of tasks. **You should bring pens, paper, notes, and a calculator to the workshop.** There are 7 workshops during the semester scheduled once every two weeks.

Laboratories: provide hands on illustration of the lecture material. There are 6 laboratories during the semester scheduled once every two weeks. **An exercise book (1B8) to serve as a lab book should be brought to the first lab.**

Exam: The exam will be held at the end of the second semester. Its format will be similar to previous exams (which are available from the library).

Blackboard: There is a Blackboard page for this paper, on which important documents and information for this paper will be posted. The lecturer will from time to time send important notices to the class via Blackboard email. Please check your student email account regularly.

Workload: The workload for this course has been designed to fit within the University guidelines, i.e. an 18 point single semester course = 180 hours per semester or 12 hours per week. Students are expected to manage their own workload over the semester.

If you have any special learning needs or requirements you are encouraged to discuss this with the Course Coordinator.

Important information about assessment for EMAN 204

Assessment	Final exam Assignments Laboratories Workshops	60% 25% 10% 5%
Exam	Duration Format	3 hours Answer all questions from Section A. Answer one question out of three for each of sections B and C. Closed book exam.
Minimum exam score	To pass this paper you are required to obtain at least 30% in the final examination.	

Academic Integrity

The University of Otago is committed to the principles of Academic Integrity, and instilling academic integrity as an integral part of a university education.

***Academic integrity** means being honest in your studying and assessments. It is the basis for ethical decision-making and behaviour in an academic context. Academic integrity is informed by the values of honesty, trust, responsibility, fairness, respect and courage. Students are expected to be aware of, and act in accordance with, the University's Academic Integrity Policy.*

***Academic Misconduct**, such as plagiarism or cheating, is a breach of Academic Integrity and is taken very seriously by the University. Types of misconduct include plagiarism, copying, unauthorised collaboration, submitting work written by someone else (including from a file sharing website, text generation software, or purchased work), taking unauthorised material into a test or exam, impersonation, and assisting someone else's misconduct. A more extensive list of the types of academic misconduct and associated processes and penalties is available in the University's Student Academic Misconduct Procedures.*

It is your responsibility to be aware of and use acceptable academic practices when completing your assessments. To access the information in the Academic Integrity Policy and learn more, please visit the University's Academic Integrity website at www.otago.ac.nz/study/academicintegrity or ask at the Student Learning Centre or Library. If you have any questions, ask your lecturer.

Some useful links:

http://www.otago.ac.nz/administration/policies/otago116838.html

http://www.otago.ac.nz/administration/policies/otago116850.html

www.otago.ac.nz/study/academicintegrity

Related Physics Department Policy

For problem based assignments, students are permitted to work together to seek solutions to the problems, but each student is required to write up their own presentation of the solutions. Copying work from other students is NOT permitted. The Physics Department considers the use of Artificial Intelligence (AI) based tools such as ChatGPT as plagiarism, unless permitted by the course coordinator.

For essay based assignments, copying another person's work verbatim (including information found on the internet or in books) and presenting it as your own is NOT permitted. If you want to use information that you find elsewhere you must acknowledge where it came from. Such material must be referenced according to a standard referencing style. You can select which referencing style suits you, but you need to use something to describe your sources! Use of AI based tools (e.g ChatGPT) is not permitted for essay based assignments and will be considered plagiarism. Your submitted work will be checked with tools that detect plagiarism and the use of AI.