

TIMETABLE ARRANGEMENT: Annual; 2nd Semester

CREDITS: 6

COURSE TEACHER: Professor Jimmy Li

ASSESSMENT:

EXAMINATION 40 %	COURSEWORK 60 %
• 2-hour examination	• Problem sets • Final project • Class participation

OBJECTIVES:

By the end of the course, students will be able to:

- Understand fundamental knowledge in the conventional and alternative energy sources in relation to their formation, production, and transportation
- Gain in-depth knowledge on their environmental effects both on human health and the quality of water, soil, and atmosphere
- Be prepared for advanced classes and career in analyzing, writing, and communicating

COURSE SYNOPSIS:

This course focuses on the formation, production, transportation, utilization/consumption of fossil fuels (i.e., petroleum, natural gas, and coal) and alternative energy sources (i.e., solar, hydro, wind, nuclear and geothermal). It also provides students with up-to-date knowledge and techniques for understanding and assessing effects of both conventional and alternative energy sources on human health, climate change, and the contamination of soil, water, and atmosphere at various scales. This course is intended for students having limited background in science or mathematics.

LECTURE TOPICS:

- Basic concepts, overview of world's energy production, consumption, and environmental issues
- Petroleum
- Natural gas
- Coal, Solar
- Hydropower and Wind
- Biofuel, Geothermal and ocean energy
- Nuclear power and nuclear waste
- Water, water quality, and water pollution
- Soil, soil quality, and soil pollution
- Air, air quality, and air pollution
- Environmental effect of fossil fuel production, transportation, and combustion
- Global climatic changes, Review and Q & A

RECOMMENDED READING LIST:

- Energy and the Environment, 2nd Ed. (2006), R Ristinen & J Kraushaar, J. Wiley & Sons
- Earth's Natural Resources (2014), J V Walther, Jones & Bartlett Learning,
- Earth Resources and the Environment, 4th Ed.(2010), J R Craig, D J Vaughan, B J Skinner, Prentice Hall

Course Learning Outcomes (CLOs) After completing this course, students would be able to:		Alignment with Programme Learning Outcomes (PLOs)*						Course Assessment Methods
		1	2	3	4	5	6	
1	Comprehend the formation, distribution, and production of the primary fossil fuel energy sources including petroleum, natural gas, and coal	✓		✓				Problem sets, Class participation & Exam
2	Comprehend renewable energy resources, their magnitude, availability, as well as past, present, and forthcoming technologies for capturing and integrating these resources into our energy infrastructure		✓				✓	Problem sets, Class participation & Exam
3	Understand major physical and chemical processes in the water, soil and atmosphere that are associated with the energy production, transportation, and consumption				✓			Problem sets, Class participation & Exam
4	Know the nature, scope and impact of the most important environmental problems arising from our current energy system. Students should come away with a thorough understanding of fossil fuel pollutants, acid rain, issues with nuclear energy, ozone depletion, and climate change.					✓		Problem sets, Final project, Class participation & Exam

***Geography Major Programme Learning Outcomes (PLOs)**

In order to meet the demands and challenges in this dynamic and ever-changing world, the Department has designed a series of well-structured and contemporary courses to cater to the different interests of students. Its courses are designed to align with the University's educational aims which hope to nurture future generations not only with a critical and intellectual mindset, but also with a passion to contribute to society in general.

After completing the programme, Geography Major students should be able to:

PLO1 critically analyse the geographical aspects of the relationship between people and the natural environment;

PLO2 demonstrate and develop an understanding of how these relationships have changed with space and over time;

PLO3 identify, collect and utilize primary and secondary data to investigate and analyse the issues and problems facing people, places and society;

PLO4 integrate, evaluate and communicate information from a variety of geographical and other sources;

PLO5 participate in promoting social, economic and environmental sustainability at the local, regional and global scales; and

PLO6 effectively apply a range of transferable skills in academic, professional and social settings.