GEOG2161 Sustainability Assessment, Analysis and Management

TIMETABLE ARRANGEMENT: Annual; 2nd Semester **CREDITS:** 6

COURSE TEACHER: Professor Zhenci XU

ASSESSMENT:

EXAMINATION 60 %	COURSEWORK 40 %
• Exam	• Final reports • Group project oral presentation

OBJECTIVES:
The course aims to enhance students' understanding of the United Nations' Sustainable Development Goals and encourages students to develop critical thinking skills and learn quantitative methods that will enable them to identify the many complex challenges in achieving sustainability, while also fostering the problem-solving abilities required to achieve sustainable development in the 21st century.

COURSE SYNOPSIS:
This course aims to introduce the concept of sustainability through the lens of the United Nations' Sustainable Development Goals (SDGs), and learn how to quantify the progress towards sustainable development. The course begins with an overview of concept and background knowledge of the 17 Sustainable Development Goals and then focus on quantification of sustainable development such as progress towards sustainable development goals, green development level, progress of ecological civilization etc. The discussion is followed by introducing students to knowledge in three areas: starting from the current progress in achieving 17 Sustainable Development Goals, through human interventions for promoting SDGs, and how to quantify sustainable development progress. The course also provides students with knowledge about trade-off and synergies between different dimensions of sustainable development and challenges we face to achieve sustainable development.

LECTURE TOPICS:
- Basic concept of all 17 SDGs, MDGs, Green Development, Ecological Civilization, Environmental Sustainability and Economic Development Quality
- Reduce poverty: frontier and sustainable development progress
- Ensure food security: frontier and sustainable development progress
- Alleviate water scarcity: frontier and sustainable development progress
- Renewable energy: frontier and sustainable development progress
- Sustainable economic growth: frontier and sustainable development progress
- Combat with climate change by reducing carbon emission: frontier and sustainable development progress
- Sustainable development index for quantifying sustainable development progress towards SDGs
- Quantification methods for Green Development and Ecological Civilization
- Quantification methods for Economic Development Quality and Environmental Sustainability
- Impacts of human interventions (e.g., policy, management, technology et al.) on achieving Sustainable Development and challenges we face to achieve sustainable development
- Interlinkages between different dimensions of sustainable development

RECOMMENDED READING LIST:

- United Nations General Assembly. 2017. Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development.https://unstats.un.org/sdgs/indicators/indicators-list/.
- Stiftung, B. Sustainable Development Solutions Network. SDG Index and Dashboards Report 2018. Global responsibilities: implementing the goals. 2018.
- Schmiedeknecht M.H. (2013) Environmental Sustainability Index. In: Idowu S.O., Capaldi N., Zu L., Gupta A.D. (eds) Encyclopedia of Corporate Social Responsibility. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-28036-8_116
- Wendling, Z. A., Emerson, J. W., de Sherbinin, A., Esty, D. C., et al. (2020). 2020 Environmental Performance Index. New Haven, CT: Yale Center for Environmental Law & Policy. epi.yale.edu (https://epi.yale.edu/downloads/epi2020report20200911.pdf)
- Xu, Z., Chau, S.N., Chen, X....& Liu, J. Assessing progress towards sustainable development over space and time. Nature 577, 74–78 (2020) doi:10.1038/s41586-019-1846-3
- Xu, Z., Li, Y., Chau, S. N., Dietz, T., Li, C., Wan, L., ... & Liu, J. (2020). Impacts of international trade on global sustainable development. Nature Sustainability, 1-8.
- Zhao, Z., Cai, M., Wang, F., Winkler, J. A., Connor, T., Chung, M. G., ... & Ouyang, Z. (2020). Synergies and tradeoffs among Sustainable Development Goals across boundaries in a metacoupled world. Science of The Total Environment, 751, 141749.
- Schmidt-Traub, G., Kroll, C., Teksoz, K., Durand-Delacre, D., & Sachs, J. D. (2017). National baselines for the Sustainable Development Goals assessed in the SDG Index and Dashboards. Nature Geoscience, 10(8), 547-555.
- Juwana, I., Muttil, N., & Perera, B. J. C. (2012). Indicator-based water sustainability assessment—A review. Science of the Total Environment, 438, 357-371.

	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	Acquire a basic understanding about the concept of sustainability and environmental, economic and sociocultural obstacles to realizing sustainability.	✔				✔		Final reports, group project oral presentation & exam
2	Identify and be able to determine progress in achieving SDGs by examining relevant targets and select indicators for assessing progress towards achieving SDGs, or quantify level in green development or ecological civilization or environmental sustainability etc.		✔	✔	✔	✔		Final reports, group project oral presentation & exam
3	Analyze spatio-temporal variations in progress towards sustainable development		✔		✔	✔		Final reports, group project oral presentation & exam
4	Learn how to achieve sustainable development through human interventions	✔		✔		✔	✔	Final reports & exam
5	Be able to critique the SDGs	✔						

*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.