

TIMETABLE ARRANGEMENT: Annual; 1st Semester

CREDITS: 6

COURSE TEACHER(S): Professor Steven H S ZHANG

ASSESSMENT:

| EXAMINATION 40 % | COURSEWORK 60 % |
|------------------|---|
| • 1.5 hours | • 2 lab exercises • 1 individual project |

OBJECTIVES:

This course generally introduces the main features of modern maps, the characteristics of big data, the opportunities and challenges, and the basic principles for producing and applying modern maps in the age of big data.

COURSE SYNOPSIS:

Maps have been widely used in our everyday work-life activities, while modern maps, such as photo-realistic streetscape maps available on the Internet and dynamic/interactive maps with changing 3D views, which are made possible with big data, i.e., extremely large datasets relating to human behavior and social interaction captured with modern positioning and affordable mobile devices, are making our daily life more convenient and our work more efficient. This course introduces the main features of modern maps, the characteristics of big data, the opportunities and challenges, and the basic principles for producing and applying modern maps in the age of big data.

LECTURE TOPICS:

- Maps history and modern maps
- Spatial big data
- Interactive maps
- 3-Dimensional maps
- GPS and satellites
- Spatial database

RECOMMENDED READING LIST:

- Crampton, Jeremy W. Mapping: A critical introduction to cartography and GIS. Vol. 11. John Wiley & Sons, 2011.
- Jiang, Zhe, and Shashi Shekhar. Spatial big data science. Schweiz: Springer International Publishing AG, 2017.
- Kennedy, Michael. The Global Positioning System and ArcGIS. CRC Press, 2009.
- Kraak, Jan-Menno, and Allan Brown. Web cartography. CRC Press, 2014.
- Kumar, Dilip, Ram Babu Singh, and Ranjeet Kaur. Spatial information technology for sustainable development goals. Cham: Springer, 2019.
- Peterson, Michael P. Interactive and animated cartography. Prentice Hall, 1995.

| 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 | have an overview of the history of maps and the emerging of modern maps | ✓ | | ✓ | | | | Final exam |
| 2 | gain comprehensive knowledge about the theory on the spatial big data in the big data era | ✓ | | ✓ | ✓ | | ✓ | Lab exercise, individual project & final exam |
| 3 | understand different techniques of interactive maps and gain related mapping skills | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Lab exercise, individual project & final exam |
| 4 | understand the state-of-the-art technologies for modern maps using various satellites | ✓ | ✓ | ✓ | ✓ | ✓ | | Lab exercise, individual project & final 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.