Lingnan University

Science Unit

Course Syllabus

Course Title	:	Location Intelligence
Course Code	:	SCI3001
Recommended Study Year	:	3 or 4
No. of Credits/Term	:	3
Mode of Tuition	:	Sectional Approach
Class Contact Hours	:	3 hours per week
Category in Major Prog.	:	Elective
Prerequisite(s) / Recommendation(s):	:	CLD9024 Mapping Our Changing World
Co-requisite	:	Nil
Exclusion	:	Nil
Exemption Requirement	:	Nil

Brief Course Description:

Adopting location intelligence by analysing location-based data using a geographical information system (GIS) in business is becoming a success strategy in the competitive global economy. This course introduces students to how location-based data and information can facilitate business professionals to extract, analyse, interpret and visualise business data in maps. The traditional means of business analytics usually present results in spreadsheets, bar graphs or simple charts. Maps allow business professionals to reveal the underlying proximity relationships and trends in their data. Linking to different data sets enables more useful analytics, leading to more informed decisions and better outcomes. Case studies of location-based services and application examples are elaborated.

Aims:

The aims of this course are to introduce students to the fundamental concepts of location intelligence and the practices of GIS and geospatial technology within business. The course will demonstrate the use of GIS for location-based analysis to support business planning and decision-making, and teach students about critical evaluations.

Learning Outcomes (LOs):

Upon completion of this course, a fully engaged student will be able to:

1. Understand the fundamental concept of GIS and location intelligence;
2. Acquire technical skills in the use of GIS software;
3. Understand how GIS can analyze, interpret and visualize location-based business data in maps;
4. Describe and evaluate examples of location intelligence applications used in business industry and other sectors; and
5. Conduct an independent location-based project.

Indicative Contents:

1. Concepts of location intelligence
2. GIS and business geography
3. GIS data and mapping
4. Spatial data analysis
5. Spatial and statistical modelling
6. Location-based analysis and applications
7. Managing accuracy and uncertainty in GIS
8. Future trend and technology

Teaching Method:

A sectional approach will be adopted. Lessons will make use of lectures, readings, videos, in-class discussions, software demonstrations, tutorials and projects to engage students in analyzing and reflecting on the topics introduced.

Assessment:

Class Attendance and Participation	10%
Tutorial assignments	35%
Quizzes and Mid-term test	30%
Final Project and Presentation	25%
Total	100%

Measurement of Learning Outcomes:

	Class attendance and participation	Tutorial assignments	Quizzes and mid-term test	Final project and presentation
1. Understand the fundamental concept of GIS and location intelligence	X		X	X
2. Acquire technical skills in the use of GIS software	X	X	X	X
3. Understand how GIS can analyze, interpret and visualize location-based business data in maps	X	X	X	X
4. Describe and evaluate examples of location intelligence applications used in business industry and other sectors	X		X	X
5. Conduct an independent location-based project	X	X		X

1. Class attendance and participation will assess the effort of students, including lecture and tutorial attendance, in-class discussions and activities.
2. The tutorial assignments require students to apply the GIS mapping and spatial analysis skills to the given case studies. These range from retrieving, processing, analyzing, interpreting and visualizing various location-based data to create maps and reports. There are number of tutorial assignments to evaluate whether the students can understand different GIS skills and apply them effectively in the provided assignment materials. A rubric will be used for the individual assessment of a practical tutorial assignment (PLO5 and PLO6).

3. Understanding the fundamental concepts of GIS/location intelligence and their examples of applications in different industries are assessed in the quizzes and mid-term test. The quizzes and mid-term test will be given throughout the semester and may include multiple choice, short answer, and/or practical skills (PLO5 and PLO7),
4. The final project and presentation require students to apply their technical skills acquired throughout tutorials and reflect on what they have learned during lectures. Students are expected to formalize a case study and work toward identifying the case problem/question for project presentation. The ideas of data collection, methodology and proposed solutions are compiled into a final report for submission by the end of the semester. A rubric will be used for the individual assessment of the project report and presentation (PLO7 and PLO8).

Required/Essential Readings:

1. Eiselt, H. A. and Marianov, Vladimir. *Applications of Location Analysis*. Springer International Publishing, 2015.
2. Worboys, Michael F. *GIS: A Computing Perspective*. London, UK: Taylor & Francis, 1995.

Recommended/Supplementary Readings:

1. Eiselt, H. A., and Marianov, Vladimir. *Foundations of Location Analysis*. Springer International Publishing, 2011.
2. Laporte, Gilbert, Nickel, Stefan, and Saldanha da Gama, Francisco. *Location Science*. Springer International Publishing, 2015.
3. O'Sullivan, David, and Unwin, David. *Geographic Information Analysis*. Hobokey, NJ: John Wiley & Sons, 2003.
4. Longley, Goodchild, Maguire, and Rhind. *Geographic Information Systems and Science*. Hoboken, NJ: John Wiley & Sons, 2001.
5. Mitchell, Andy. *The ESRI Guide to GIS Analysis Volume 1: Geographic Patterns & Relationships*, ESRI Press, 1999.
6. Mitchell, Andy. *The ESRI Guide to GIS Analysis, Volume 2: Spatial Measurements and Statistics*, ESRI Press, 2005.
7. Mitchell, Andy. *The ESRI Guide to GIS Analysis, Volume 3: Modeling Suitability, Movement, and Interaction*, ESRI Press, 2012.

Note: More readings will be uploaded on Moodle in due course

Important Notes:

(1) Students are expected to spend a total of 9 hours (i.e. 3 hours of class contact and 6 hours of personal study) per week to achieve the course learning outcomes.

(2) Students shall be aware of the University regulations about dishonest practice in course work, tests and examinations, and the possible consequences as stipulated in the Regulations Governing University Examinations. In particular, plagiarism, being a kind of dishonest practice, is "the presentation of another person's work without proper acknowledgement of the source, including exact phrases, or summarised ideas, or even footnotes/citations, whether protected by copyright or not, as the student's own work". Students are required to strictly follow university regulations governing academic integrity and honesty.

(3) Students are required to submit writing assignment(s) using Turnitin.

(4) To enhance students' understanding of plagiarism, a mini-course "Online Tutorial on Plagiarism Awareness" is available on https://pla.ln.edu.hk/.

Grading Rubric for Tutorial Assignments of SCI3001 – Location Intelligence
Score = # points per assignment x proportion pointe earned

Criteria	Exceeds standard	Meets standard	Fails to meet standard	Points
Address the assignment and follow instructions (10%)	Addresses the entire assignment and follows instructions completely and thoroughly (1 pts)	Addresses the assignment and follow most of the instructions (0.5 pts)	Fails to addresses the assignment and follow instructions (0 pts)	1
Understanding context and audience (20%)	Demonstrates a thorough understanding of context and audience. (2 pts)	Demonstrates attention to the audience and purpose of the assignment (1 pts)	Fails to demonstrate understanding of context and audience (0 pts)	2
Depth and organization of content (30%)	Includes full depth of analysis and detail of the subject matter and organizes the material in a thoughtful and effective manner (3 pts)	Includes some depth of analysis and detail of the subject matter and organizes the material but ideas could be communicated more fully and effectively (2-1 pts)	Fails to include adequate depth of subject matter or organize material effectively (0 pts)	3
Uses maps and language effectively (40%)	Uses maps and language that effectively conveys the message and contains only a few errors (4 pts)	Uses simple maps and language which may contain some errors (2-3 pts)	Fails to use clear maps and language (0-1 pts)	4
Proportion points earned				10 points

Grading Rubric for Quizzes and Mid-term quiz of SCI3001 – Location Intelligence
Score = # points per assignment x proportion pointe earned

Criteria	Exceeds standard	Meets standard	Fails to meet standard	Points
Answer the question completely and thoroughly (10%)	Answers the entire question and follows instructions completely and thoroughly (1 pts)	Answers most of the questions and follow most of the instructions (0.5 pts)	Fails to answer the question and follow instructions (0 pts)	1
Organization (30%)	Organizes the answer in a thoughtful and effective manner (3 pts)	Attempts to organize the material but organization is not effective (1-2 pts)	Fails to organize material (0 pts)	3
Level of detail (30%)	Provides level of correct detail appropriate for the situation (3 pts)	Provides some detail in the answer, but some details are lacking or incorrect (1-2 pts)	Fails to provide correct level of detail (0 pts)	3
Effectiveness of communication (30%)	Communicates the answer effectively in writing and uses diagrams and graphs as appropriate and contains few errors (3 pts)	Adequately communicates the answer in writing and/or uses diagrams and graphs that might contain a few errors (1-2 pts)	Fails to communicate effectively (0 pts)	3
Proportion points earned				10 points

Grading Rubric for Final Project and Presentation of SCI3001 – Location Intelligence
Score = # points per assignment x proportion pointe earned

Criteria	Exceeds standard	Meets standard	Fails to meet standard	Points
Topic and quality of project (30%)	Addresses an important or useful case study and question. Demonstrates good use of various course materials to correctly analyze and interpret the results. (3 pts)	Addresses an average case study and question. Fair use of course materials to analyze and interpret the results. (1-2 pts)	Topic of case study and quality fails to meet standard (0 pts)	3
Application of GIS concepts and technical skills (30%)	Demonstrates a thorough understanding of GIS concepts and technical skills. (3 pts)	Demonstrates some attention to the GIS concepts and technical skills (1-2 pts)	Fails to demonstrate understanding of GIS concepts and technical skills (0 pts)	3
Written report (20%)	Organizes the writing in a thoughtful and effective manner and draws the correct interpretation of results and conclusions (2 pts)	Attempts to organize the material but organization is not effective. Results and conclusions are presented but may be simple (1 pts)	Fails to organize the material and/or present results and conclusions. (0 pts)	2
Clarity of presentation (20%)	Uses GIS skills and language that effectively conveys the message and contains a few errors (2 pts)	Uses simple GIS skills and language which may contain some errors (1 pts)	Fails to use GIS skills and clear language (0 pts)	2
Proportion points earned				10 points