Course Title	: Mapping Our Changing World
Course Code	: CLD9024
Recommended Study Year	: Any
No. of Credits/Term	: 3
Mode of Tuition	: Sectional
Class Contact Hours	: Two 1.5-hour sections per week
Category	: Science, Technology, Mathematics and Society
Cluster	
Prerequisite(s)	: Nil
Co-requisite(s)	: Nil
Exclusion(s)	: Nil
Exemption Requirement(s)	: Nil

Brief Course Description:

This course is about geography and maps with an introduction to techniques of making maps. The contents cover principles of map making and design, thematic mapping techniques, map data processing and management. Modern technologies today such as web-based mapping, GPS and GIS (Global Positioning and Geographic Information Systems) tools will also be covered. This course combines classroom teaching and hands-on tutorial in two 1.5-hour sessions. Classroom teaching involves lectures about basic mapping concepts and spatial thinking. Hands-on tutorial enables students to explore industry leading web-based mapping applications and learn GIS analytical skills by practice.

Aims:

The aims of this course are to introduce students to the principles of map making and mapping techniques, demonstrate the use of industry leading web-based mapping resources to examine our changing world, and teach students about critical evaluation and design assessment.

Learning Outcomes (LOs):

Upon completion of this course, students will be able to:
1. Explore the world through digital maps and modern technologies
2. Apply the principles of map making
3. Apply basic computer mapping skills
4. Become proficient in the use of GIS
5. Conduct an independent map-related group project

Indicative Contents:

Map making and design concepts
Map data processing and analysis
Map projection
Thematic map design
Geographic data management and representation
Geographic Information Systems (GIS)
Spatial Analysis
Maps and society
GIS and Smart City

Teaching Method:
Sectional approach will be adopted. Lessons will make use of lectures, readings, videos, in-class discussions and/or group projects to engage students in analyzing and reflecting on the topics introduced.

Course Assessment:

Participation and Tutorial assignments	35%
Final quiz	30%
Final group project and report	35%

Measurement of Learning Outcomes:

Assessment Method	Tutorial assignments	Final quiz	Final group project and report
Explore the world through digital maps and modern technologies	X	X	X
Apply the principles of map making	X	X	X
Apply thematic mapping techniques	X	X	X
Become proficient in the use of GIS	X		X
Conduct an independent map-related group project	X		X

Essential Readings:
Golledge, R. G., Stimson, R. J. (1997) Spatial Behavior: A Geographic Perspective. Guilford Press.
Dodge, M., Kitchin, R., Perkins, C. (2011). The Map Reader: Theories of Mapping Practice and Cartographic Representation. Hoboken, NJ: Wiley.
Kraak, M., Ormeling, F. J. (2013) Cartography: Visualization of Spatial Data. Routledge.
Montello, D. R., Grossner, K. E., Janelle, D. G. (2014) Space in Mind: Concepts for Spatial, Learning and Education. MIT Press.
Pimpler, E. (2017). Spatial Analytics with ArcGIS. Packt

Recommended/Supplementary Readings:
Will be uploaded on Moodle in due course.

Proposed Course Outline:

Week	Lecture Topics	Tutorials	Important Dates
1	Course overview: What is a map?	Get to know each other & class discussions	
2	Introduction to mapping	Tutorial 1: Field survey	Assignment 1 due
3	Geographic data management and representation	Tutorial 2: Explore ArcGIS Online	
4	Basic mapping skills	Tutorial 3: Basic GIS Mapping	
5	Map projection	Tutorial 4: GIS and spatial analysis	Assignment 2 due
6	GIS and spatial analysis (I)	Tutorial 5: Environmental impact assessment	
7	GIS and spatial analysis (II)	Tutorial 6: Create your own GIS data collection app	Assignment 3 due
8	Formulate group projects	Tutorial 7: Create your own storymap	
9	GIS technology and applications	Tutorial 8: Create your own web and mobile apps	Project proposal due
10	Discussion of map critique	Tutorial 9: Review project proposal and quiz revision	
11	The future of GIS and smart city	Project consultation	
12		Project Presentation	
13	Final quiz	Project consultation	Final project due
14-15	Summary		

Tutorial Assignments:
Assignment 1
Create maps using Google Earth with the data they have collected during the field survey tutorial and also various data sources.

Assignment 2
GIS data preparation and basic spatial analysis using ArcGIS Online

Assignment 3
Use GIS and various spatial analysis tools to address applied problems and/or research questions

Final Group Project and Report:
Students in a group of 4 to 5 are required to decide a topic and create a story map for the project. Students should write-up a project proposal to explain the topic they have chosen and the tentative work plan. Presentation and final report should explain the map design, skills being used, analysis results and limitations.

Grading Rubric for Tutorial Assignments
Score = # points per assignment x proportion pointe earned

Criteria	Exceeds standard	Meets standard	Fails to meet standard	Points
Follow tutorial instructions (10%)	Follow tutorial instructions completely and thoroughly (1 pts)	Follow most of the tutorial instructions (0.5 pts)	Fails to follow any instructions (0 pts)	
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 (0.5 pts)	Fails to demonstrate understanding of context and audience (0 pts)	
Depth and organization of content (40%)	Includes in full depth of analysis and detail of the subject matter and organizes the material in a thoughtful and effective manner (4 pts)	Includes some depth of analysis and detail subject matter and organizes the material but ideas could be communicated more fully and effectively (2-3 pts)	Fails to include adequate depth of subject matter or organize material (0-1 pts)	
Uses maps and language effectively (30%)	Uses maps and language that effectively conveys the message and contains no or a few errors (3 pts)	Uses simple maps and language which may contain some minor errors (1-2 pts)	Fail to use clear maps and language (0-1 pts)	
Proportion points earned				=#marks

Grading Rubric for Final Project and Report
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 project proposal. Demonstrate good use of various data sources to correctly analyze and interpret the results. (21- 30 pts)	Addresses an average project proposal. Use of data sources to analyze and interpret the results. (11- 20 pts)	Topic and project fails to meet standard (0 – 10 pts)	
Map contents and design (30%)	Demonstrates a thorough understanding of map design and cartographic skills. (21-30 pts)	Demonstrates attention to the map design and cartographic skills (11-20 pts)	Fails to demonstrate understanding of map design and cartographic skills (0-10 pts)	
Written Report (20%)	Organizes the writing in a thoughtful and effective manner and draws the correct interpretation of results and conclusions (14-20 pts)	Attempts to organize the material but organization is not effective. Results and conclusions presented but may be simple (9-13 pts)	Fails to meet standard (0-7 pts)	
Effectiveness of communication through maps and language (20%)	Uses maps and language that effectively conveys the message and contains no or a few errors (14-20 pts)	Uses simple maps and language which may contain some minor errors (9-13 pts)	Fail to use clear maps and language (0-7 pts)	
Proportion points earned				=#marks

Grading Rubric for Final quiz
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)	
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)	
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)	
Effectiveness of communication (30%)	Communicates the answer effectively in writing and using diagrams and graphs as appropriate and contains no or few errors (3 pts)	Adequately communicates the answer in writing or using diagrams and graphs that might contain some minor errors (1-2 pts)	Fails to communicate effectively (0 pts)	
Proportion points earned				=#marks * 4