Title (Units): **COMP2036 AI and Data Analytics for Health and Social Innovation II (3,1,2)**

Course Aims: The aim of this course is to apply AI and data analytics knowledge and skills to implement solutions for health and social innovation. Students are also expected to deploy the solutions in real-world settings, as well as evaluate and reflect on their effectiveness by considering technical and non-technical aspects. Students are expected to develop hands-on skills to build prototypes and test them.

Prerequisite: COMP2035 AI and Data Analytics for Health and Social Innovation I

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Describe the software design environment and the relevant skills for deploying AI and data analytics solution.
2	Explain human-centric design for real-world application of AI and data analytics.
	Professional Skill
3	Collect the essential data from publicly available databases, websites and user groups for building the computational models.
4	Develop innovative prototypes for deployment in real-world health and social well-being settings.
5	Evaluate the effectiveness of alternative solutions and their potential impact.

Calendar Description: The course follows project-based learning, and students are expected to implement and deploy AI and data analytics solutions in real-world settings. Students are also expected to evaluate the effectiveness of alternative solutions (including technical and non-technical issues) by immersive learning.

In addition, students will adopt the design thinking methodology for human-centric design to tackle a specific problem in healthcare and social well-being with proper use of advanced computational technologies, and the final outcomes are expected to be deployed for evaluation.

After completing the course, students will gain experience of applying computational technologies enabled innovations to practical challenges in healthcare and social well-being.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-2	Lectures will be given to introduce the software design environment for the particular devices and the theory of human-centric design in software development. Case Study Tutorials will be used to help students identify the most appropriate models and tools to tackle their particular challenges.
3-4	Case Study Tutorials and Workshops will inspire students to apply design thinking to develop feasible and innovative solutions for real-world healthcare and social well-being problems. Laboratory sessions will be given to show students various computational models and platforms and provide students with hands-on experience for problem-solving.
5	Projects will evaluate students' understanding of healthcare and social well-being issues and sustainable goals. It will also help students consolidate their knowledge on various applications, by practicing the uses of various computational tools.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks

1	Case Study Assignment	10%	1-4	Case Study Assignment is used to test how well students understand and apply the concepts and skills to perform analysis on cases.
2	Lab Exercises	25%	2,4	Lab Exercises are used to test whether students acquire computational and software skills.
3	Workshop Assignments	25%	5	Workshop Assignments will test how well students apply human-centric design and development.
4	Group project	40%	1-5	Group Project is used to evaluate if students can relate lecture concepts and skills acquired via lab to real cases.

Assessment Rubrics:

Excellent (A)	• Achieve the first two CILOs, demonstrating a thorough understanding of the concepts of information management technology in health and social environment. • Demonstrate excellent ability to use IT tools to acquire, communicate and present health and social well-being related information via different digital media. • Able to well apply Design Thinking to identify and analyse health and social challenges, and design user-centric solutions using information technology. • Able to well integrate information technologies and health and social well-being knowledge to solve related challenges innovatively.
Good (B)	• Achieve the first two CILOs, demonstrating a good understanding of the concepts of information management technology in health and social environment. • Demonstrate good ability to use IT tools to acquire, communicate and present health and social well-being related information via different digital media. • Able to apply Design Thinking to identify and analyse health and social challenges, and design user-centric solutions using information technology. • Able to integrate information technologies and health and social well-being knowledge to solve related challenges reasonably.
Satisfactory (C)	• Achieve the first two CILOs, demonstrating a basic level of understanding of the concepts of information management technology in health and social environment. • Able to use a few IT tools to acquire, communicate and present health and social well-being related information via different digital media. • Able to apply certain Design Thinking to identify and analyse health and social challenges, and design user-centric solutions using information technology. • Able to integrate information technologies and health and social well-being knowledge to address some issues under the related challenges.
Marginal Pass (D)	• Achieve the first two CILOs, demonstrating a minimal level of understanding of the concepts of information management technology in health and social environment. • Able to use basic IT tools to acquire, communicate and present health and social well-being related information via different digital media formats.

	• Able to apply basic Design Thinking to identify and analyse health and social challenges, and design user-centric solutions using information technology. • Able to integrate basic information technologies and health and social well-being knowledge to address some simple issues under the related challenges.
Fail (F)	• Do not achieve the first two CILOs, and have little understanding of the concepts of information management technology in business environment. • Unable to use basic IT tools to acquire, communicate and present health and social well-being related information via different digital media. • Unable to apply basic Design Thinking to identify and analyse health and social challenges, and design user-centric solutions using information technology. • Unable to integrate basic information technologies and health and social well-being knowledge to address related challenges.

Course Content and CILOs Mapping:

Content		**CILO No.**
I	Case studies of IT-enabled health and social innovation	4,5
II	Design Thinking for Innovation	2,5
III	Artificial Intelligence and Data Analytics Application	1-5

References:

- Robert Shimonski (2021). AI in Healthcare: How Artificial Intelligence Is Changing IT Operations and Infrastructure Services. Wiley
- Adam Bohr, Kaveh Memarzadeh (2020). Artificial Intelligence in Healthcare. Elsevier
- Gassmann, O., Böhm, J., & Palmié, M. (2019). Smart Cities: Introducing Digital Innovation to Cities. West Yorkshire, England: Emerald Group Publishing.
- Lewrick, M., Link, P., & Leifer, L. (2018). The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems. Hoboken, NJ: John Wiley & Sons.

Course Content:

Topic

I. Case studies of IT-enabled health and social innovation

II. Design Thinking for Innovation
A. Foundations of Design Thinking
B. Stanford Design Thinking methodology

III. Artificial Intelligence and Data Analytics Application
A. Digital inclusion
B. Data collection, processing, and analytics
C. Artificial Intelligence for social innovation
D. Developing Internet of Things (IOT) and Wearable Devices for Social Innovation