GE2316: COMPUTING SNAPSHOT, TODAY AND TOMORROW

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Computing Snapshot, Today and Tomorrow

Subject Code
GE - Gateway Education
Course Number
2316

Academic Unit
Electrical Engineering (EE)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

GE Area (Primary)
Area 3 - Science and Technology

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

The course enables students to recognize the fundamental concepts of contemporary computing and current AI computing. The course will use multiple disciplines applications, such as commerce, finance, health science, entertainments, and engineering. The course adapts a top-down approach, from applications and layers of computing technologies, to fundamental concepts of computing, such that the students become savvy on computing technology.

Computing and AI technologies has gotten into our everyday's living, business making and professional activities. Hence it is beneficial to learn basic know-how, and the concepts behind these technologies. The course will provide a snapshot on computing technologies on business, science and engineering disciplines.

This course aims to empower the students by providing an environment for self-initiative and freedom of topic choice, and promote cross-learning. It is unrealistic and unnecessary to learn everything concerning computing.

The course is composed of three parts:

- Basic computing and AI concepts;
- Computing and AI applications on various disciplines, and how these technologies extend knowledge and solve problems;
- Case-studies: Applications in education, finance and banking, commerce, health, legal, games, social and leisure, and engineering etc.

About four students will form a discussion panel. They will present their group project summaries of a selected topic. The students in the audience will serve as adjudicators, and will fire questions for discussion, with the lecturer serving as the modulator.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Recognize general knowledge on computing and AI concepts.	35	x	x	
2	Describe general application concepts, structures, and methodologies of computing.	20	x	x	
3	Relate today's and speculate tomorrow's computing technology on various disciplines.	25	x	x	x
4	Reflect on the computing and AI evolution, future applications of business, finance, legal, health, and entertainments, and case studies on applications. Recognize the ethnical issue of technology.	20	x	x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Lectures on various computer related topics	1, 2, 3, 4	3 hrs/week
2	Class group activities	Show & Tell, Group Reports and Presentation, peer assessment	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignments and project (min 3)	1, 2, 3, 4	10	
2	Tests (min 2)	1, 2, 3, 4	30	
3	Presentation	3, 4	10	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

Remark:
To pass the course, students are required to achieve at least 30% in the continuous assessment and 30% in the examination.

Assessment Rubrics (AR)

Assessment Task

Coursework

Criterion

Achievements in CILOs

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task
Examination

Criterion
Achievements in CILOs

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Computing and AI systems
Processor, memory, storage, big data, machine learning.

Applications and application methodologies
Finance, commerce, communication, legal, education, health science, information systems, and expert systems.

Computing issues
security, protection, online, real-time.

Social challenges
privacy, personal data, ethics (particularly on Internets), computing crimes.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Brian K. Williams and Stacey Sawyer, “Using Information Technology”, 10th ed. McGraw-Hill, 2013. ISBN 978-0-07-131800-6. Note: The book covers many aspects of computing, from binary to technological singularity, and provides “Practical Action” and “Experience Box” in each chapter, to discuss topics of general interest, such as time management, critical thinking, tips for avoiding spyware, how to protect one’s data and identity from getting stolen, and how to do Web research and plagiarism, etc.
2	http://www.wikipedia.org/
3	https://www.google.com/webhp?complete=1&hl=en
4	Other Internet public information websites.

Annex (for GE courses only)

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)

PILO 1: Demonstrate the capacity for self-directed learning

1

PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology

1

PILO 3: Demonstrate critical thinking skills

4

PILO 4: Interpret information and numerical data

2

PILO 5: Produce structured, well-organised and fluent text

3

PILO 6: Demonstrate effective oral communication skills

2

PILO 7: Demonstrate an ability to work effectively in a team

4

PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues

4

PILO 9: Value ethical and socially responsible actions

1

PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation

3

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task

Final examination