GE2338: INTERNET APPLICATIONS AND SECURITY

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Internet Applications and Security

Subject Code
GE - Gateway Education

Course Number
2338

Academic Unit
Computer Science (CS)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
A1, A2 - Associate Degree
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

Today, surfing and doing transactions on the World Wide Web (WWW) permeate most business and individual undertakings. An enormous amount of human interactions and data exchange are done directly over the Internet. This course aims to provide introduction level knowledge about the Internet, as well as various applications and services running on it, such as e-commerce, e-banking, social networks, location-based services. The wide spectrum materials to be covered include: service models of social network; major underlying technologies and driving forces that support it, including both the technological and business perspectives; obstacles that might inhibit the growth (e.g., security and privacy issues). The legal, ethical and societal aspects of network security and privacy will also be discussed. Key topics includes introduction to the Internet, e-commerce, social networking, internet security, data security, peer-to-peer/sharing economy, location-based services, and digital marketing. Learning activities include lectures, group projects, case studies, hands-on assignment, and tutorial sessions.

Course Intended Learning Outcomes (CILOs)

<table>
<thead>
<tr>
<th>CILOs</th>
<th>Weighting (if app.)</th>
<th>DEC-A1</th>
<th>DEC-A2</th>
<th>DEC-A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Identify essential information security, privacy and service requirements and issues through observation of the operations of computer and internet/WWW applications and services (e.g., e-commerce, e-banking, social networks, location-based services and digital marketing) and discovering the practice and standards.</td>
<td>x</td>
<td>x</td>
<td></td>
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</tr>
<tr>
<td>2 Understand the fundamentals of those various computing and networking technologies supporting internet / WWW applications and services, and relate those technologies to different application spectrum.</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3 Discover the obstacles that remain to be addressed for the growth of internet/WWW applications and services (such as security and privacy threats) and their impacts, including legal, ethical and societal aspects.</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>4 Apply the general technology principle in internet/WWW applications and services and information security and privacy.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5 Develop an attitude to evaluate internet/WWW applications and security and privacy issues in computer systems and propose solutions for them through independent investigation.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>TLAs</th>
<th>Brief Description</th>
<th>CILO No.</th>
<th>Hours/week (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Explain key issues and solutions about internet/WWW applications and services, and information security and privacy.</td>
<td>1, 2, 3, 4, 5</td>
<td>3 hours/week</td>
</tr>
<tr>
<td>Tutorial</td>
<td>Require students to conduct hands-on exercises about internet/WWW applications and services, and information security and privacy.</td>
<td>1, 2, 3, 4, 5</td>
<td>8 hours/ semester</td>
</tr>
<tr>
<td>Problem Set</td>
<td>Require student to answer one problem set that consists of questions related to some modern internet/WWW applications and services, and information security and privacy that are commonly used and related in students’ daily life, respectively.</td>
<td>1, 2, 3, 4, 5</td>
<td>After class</td>
</tr>
<tr>
<td>Quiz</td>
<td>Require students to complete one in-class quiz that includes questions about the teaching materials and tests their understanding and knowledge about the subject.</td>
<td>1, 2, 3, 4, 5</td>
<td>In-class</td>
</tr>
<tr>
<td>Group project</td>
<td>Require students to work as a team on a timely issue related to internet/WWW applications and services, or information security and privacy, and they have to identify issue, prove the existence of the issue, find out a solution, and evaluate the solution.</td>
<td>1, 2, 3, 4, 5</td>
<td>After class</td>
</tr>
</tbody>
</table>
Assessment Tasks / Activities (ATs)

<table>
<thead>
<tr>
<th>ATs</th>
<th>CILO No.</th>
<th>Weighting (%)</th>
<th>Remarks (e.g. Parameter for GenAI use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Problem set</td>
<td>1, 2, 3, 4</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2 Quiz</td>
<td>1, 2, 3, 4</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3 Group Projects</td>
<td>4, 5</td>
<td>40</td>
<td></td>
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</tbody>
</table>

Continuous Assessment (%)
60

Examination (%)
40

Examination Duration (Hours)
2

Additional Information for ATs
For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Rubrics (AR)

Assessment Task
Problem set

Criterion
CAPACITY for DIRECTED LEARNING to understand the key concepts of internet/WWW applications and services, and information security and privacy.

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
Quiz

Criterion
CAPACITY for DIRECTED LEARNING to understand the key concepts of internet/WWW applications and services, and information security and privacy.

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

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Assessment Task
Group project and presentation

Criterion
ABILITY to IDENTIFY an existing real-world issue or a new challenge related to internet/WWW applications and services, and information security and privacy, DESIGN a solution, EVALUATE the effectiveness of the solution, and EXPLAIN in DETAIL about the project

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

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Assessment Task
Examination

Criterion
ABILITY to APPLY and EXPLAIN knowledge and understanding of internet/WWW applications and services, and information security and privacy.

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
· Introduction to the Internet
· E-commerce
· Social Networking
· Internet Security
· Data Security
· Peer-to-Peer / Sharing Economy
· Location-Based Services
· Digital Marketing

Reading List
Compulsory Readings

<table>
<thead>
<tr>
<th>Title</th>
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<tbody>
<tr>
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Additional Readings

<table>
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<tr>
<th>Title</th>
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<tbody>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

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, 2, 3

PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology
1, 2, 3, 4, 5

PILO 3: Demonstrate critical thinking skills
2, 5
PILO 4: Interpret information and numerical data
2, 3

PILO 5: Produce structured, well-organised and fluent text
1, 2, 3, 4, 5

PILO 6: Demonstrate effective oral communication skills
1, 2, 3, 5

PILO 7: Demonstrate an ability to work effectively in a team
5

PILO 9: Value ethical and socially responsible actions
2

PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation
5

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
Nil