Course Code: CSE 498	CIE Marks: 60
Course Title: Social and Professional Issues in Computing	SEE Marks: 40
Credits: 3	

Course Content (from syllabus):
Social context of computing. Methods and tools of analysis. Professional and ethical responsibilities: freedom of speech, privacy. Ethical aspect of Social & professional context: normative ethics, computer ethics, technical ethics, research ethics. Intellectual property: copyright, patent and civil liberties. Computer crime: hacking, cyberwarfare. Risks and liabilities of computer-based systems. Evaluating technologies. Economic issues in computing: decision making and propagate creativity. Philosophical frameworks, teamwork.

1. Course Description/Rationale:
Social and Professional Issues in Computing course is a theory course which deals with different issues related to both social and professional life. Hence, this course will deal with different computing issues i.e. privacy, social engineering, crime, hacking, and freedom of speech issue and so on. Furthermore, throughout the course we will focus on various professional issues like intellectual property, ethics and professional ethics, human vs computer, trusting computer etc. Besides, different social and international issues will also be discussed in this course.

1.1 Course Objective

To provide a solid conceptual understanding of the fundamentals of Social and Professional Issues in Computing. More specifically,

- To learn the implications and impact of the technology
- To learn the ethics regarding the dissemination of sensitive information
- To learn the concerns regarding the usage of social media in the workplace
- To learn about plagiarism
- To learn about the hacking by governments and vice versa.

1.2 Course Learning Outcome (CLO): (at the end of the course, students will be able to do:)

CLO1	**Define** the implications, impacts and benefits of modern computing technologies.
CLO2	**Justify** the application of freedom of speech, hate speech, privacy and Computer crime
CLO3	**Explain** different types of ethics from the perspective of data driven society to build a team with moral values.
CLO4	**Interpret & apply** the intellectual property such as copyright, patent, trademark and trade secret
CLO5	**Assess** the risks and failures for a better system, organization & society

Content of the course:

SL	Course Content (as summary)	Hrs	CLO's
1	Benefits	3	CLO-1
2	Privacy, Freedom of Speech, Computer Crime	12	CLO-2
3	Ethics, Technology and Engineering, AI, Empathy & Ethics, Ethical Issues in Data Science, Professional Ethics and Responsibilities, Teamwork & Creativity	21	CLO-3
4	Intellectual Property	3	CLO-4
5	Errors, Failures & Risks, Decision Making & Mitigating Risks, Evaluating & Controlling Technology	9	CLO-5

1.3.Program Outcomes (PO's)

Program Outcomes are reported in Appendix-I.

1.4.CO-PO Mapping

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8	PLO-9	PLO-10	PLO-11	PLO-12
CLO-1							✓					
CLO-2			✓			✓						
CLO-3								✓				
CLO-4									✓	✓		
CLO-5												✓

1.5. Mapping Course learning outcome(CLO'S) with the teaching-learning and Assessment Strategy

CLO's No.	CO Statement	Assessment tools	Corresponding PLO No.	Domain /level of learning taxonomy	Level of Knowledge
CLO-1	The implications, impacts and benefits of modern computing technologies.	Class Test /Assignment/ Midterm/Final examination	PLO-7	L1	K7
CLO-2	The application of freedom of speech, hate speech, privacy and Computer crime	Class Test /Assignment/ Midterm examination	PLO-3	L2	K5
CLO-3	Different types of ethics from the perspective of data driven society to build a team with moral values.	Class Test /Assignment/Final examination	PLO-8	L2	K7
CLO-4	The intellectual property such as copyright, patent, trademark and trade secret	Class Test /Assignment/Final examination	PLO-9	L2	K1-K4
CLO-5	The risks and failures for a better system, organization & society	Class Test /Assignment/Final examination	PLO-12	L5	K1-K4

1.6.CO Assessment Scheme

Assessment Task	CO's					Mark (Total=100)
	CO1	CO2	CO3	CO4	CO5	
Attendance	--	--	--	--	--	7
Class Test (CT1, CT2, CT3)	--	--	--	--	--	15
Assignment	--	--	--	--	--	5
Presentation	--	--	--	--	--	8
Midterm	5	10	10	0	--	25

Examination						
Semester Final Examination	0	10	10	15	5	40
Total Mark	5	20	20	20	--	100

2. Strategies and approaches to learning

2.1.Teaching and Learning Activities (TLA)

TLA1	Interactive discussion using Online/multimedia or whiteboard
TLA2	Group discussion and presentation regarding diverse problems and corresponding lectures.
TLA3	Evaluation of class performances to reach each student in a class for every topic.

3. Course Schedule and Structure

3.1 Learning Materials:

Textbook/Recommended Readings:

1. A Gift of Fire, 4th Edition Author: Sara Baase

3.2 Reference Books/Supplementary Readings:

1. Ethics for the Information Age – Sixth Edition

3.3 Course Delivery Plan/Lesson Delivery Plan:

Week/Lesson (hour)	**Discussion Topic and Book Reference**	**Student Activities during Online and Onsite** [course teacher will decide based on the type of the contents]	**Mapping with CLO and PLO**	**Assessment Plan**
Week-1 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Benefits (Unwrapping the Gift)- The Pace of Change Change and Unexpected Developments Ref. A Gift of Fire – Fourth Edition (Chapter 1)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO-1, PLO-7	Class Test, Assignmen, Midterm

	Lesson 2 : Benefits (Unwrapping the Gift)- Themes, Ethics Ref. A Gift of Fire – Fourth Edition (Chapter 1)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-2 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Privacy- Privacy Risks and Principles, The Fourth Amendment Ref. A Gift of Fire – Fourth Edition (Chapter 2)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO-2, PLO-6	Class Test, Assignment, Midterm
	Lesson 2: Privacy- Expectation of Privacy, and Surveillance Technologies Ref. A Gift of Fire – Fourth Edition (Chapter 2)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-3 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Privacy- The Business and Social Sectors, Government Systems, Protecting Privacy, Technology, Markets, Rights, and Laws, Communications Ref. A Gift of Fire – Fourth Edition (Chapter 2)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
	Lesson 2 : Privacy- Technology, Markets, Rights, and Laws, Communications Ref. A Gift of Fire – Fourth Edition (Chapter 2)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		

Week-4 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Freedom of Speech-Communications Paradigms, Controlling Speech, Posting, Selling, and Leaking Sensitive Material Ref. A Gift of Fire – Fourth Edition (Chapter 3)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment , Midterm
	Lesson 2: Freedom of Speech- Anonymity , The Global Net: Censorship and Political Freedom , Net Neutrality Regulations orthe Market? Ref. A Gift of Fire – Fourth Edition (Chapter 3)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-5 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Computer Crime-Introduction,Hacking Identity Theft and Credit Card Fraud Ref. A Gift of Fire – Fourth Edition (Chapter 5	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO-3 PLO-8	Class Test, Assignment,Midterm
	Lesson 2: Computer Crime- Whose Laws Rule the Web? Ref. A Gift of Fire – Fourth Edition (Chapter 5)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-6	**Lesson 1:** Ethics-Normative vs. descriptive Ethics, Three types of normative Ethics, Three Main Ethical Approaches, Ref. Handout	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment

Lesson 1 & 2 [3 Hours]	**Lesson 2:** Ethics- Whistleblowing, Virtue Theory(ethics of Character), Deontological Ethics, Consequentialism, Utilitarianism, Comparing the Three Ethical Approaches Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		, Midterm
Week-7 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Ethics- "Whistleblowing", Dimensions of Ethics (3 "R's" of Ethics), Codes of Ethics, Positive roles of codes of ethics Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
	Lesson 2: Protecting the status of Quo, Limitations of codes of ethics, Computer Ethics Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-8 Lesson 1 & 2 [3 Hours]	**Lesson 1 :** Ethics, Technology and Engineering- Responsibility of engineers, Ethical Cycle, Ethics in Designing Technology Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO-3	Class Test, Assignment , Midterm
	Lesson 2: Ethics, Technology and Engineering- Ethics in Distribution , Research Ethics Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		

Week-9 Lesson 1 & 2 [3 Hours]	**Lesson 1:** AI, Empathy & Ethics- Fairness & Protection, Fairness vs. Accuracy, Perception & Empathy Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	PLO-8	Class Test, Assignment, Midterm
	Lesson 2: AI, Empathy & Ethics- Discriminators, Manage Fairness and Non Discrimination Risks, Ethical Risk Analysis	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-10 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Ethical Issues in Data Science - Algorithmic Bias, Bias regarding Race & Gender Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment, Final exam
	Lesson 2: Ethical Issues in Data Science - Contemporary Ethical Issues from Tech Companies, Data Science in Healthcare Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-11 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Professional Ethics and Responsibilities- What Is “Professional Ethics”? , Ethical guidelines for Computer Professionals Ref. A Gift of Fire – Fourth Edition (Chapter 9)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment, Final exam

	Lesson 2: Professional Ethics and Responsibilities- Ethical Social Media , Scenarios Ref. A Gift of Fire – Fourth Edition (Chapter 9)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-12 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Teamwork and Creativity- Changing & Challenging Perspectives , Raw & End Materials , Tools for Thinking Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment , Final exam
	Lesson 2: Teamwork and Creativity- Pitching Ideas , Uniformity & Social Control Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-13 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Intellectual Property- Principles, Laws, and Cases, Responses to Copyright Infringement Ref. A Gift of Fire – Fourth Edition (Chapter 4)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO-4 PLO-9	Class Test, Assignment , Final Exam
	Lesson 2: Intellectual Property-	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture		
	Search Engines and Online Libraries, Free Software , Patents for Inventions in Software Ref. A Gift of Fire – Fourth Edition (Chapter 4)	video, Lecture note, Open discussion		

Week-14 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Errors, Failures, and Risks- Failures and Errors in Computer Systems , Case Study: The Therac-25 Ref. A Gift of Fire – Fourth Edition (Chapter 8)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion	CLO5 PLO-12	Class Test, Assignment , Final Exam
	Lesson 2: Increasing Reliability and Safety, Dependence, Risk, and Progress Ref. A Gift of Fire – Fourth Edition (Chapter 8)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-15 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Decision Making & Mitigate Risks - Develop and Deploy Ethical Organizational Policies , The wind of change: how to fight ethical blindness Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment , Final Exam
	Lesson 2: Decision Making & Mitigate Risks - Risk Analysis, Globalization, Culture, and Brands Ref. Handouts	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		
Week-16 Lesson 1 & 2 [3 Hours]	**Lesson 1:** Evaluating and Controlling Technology- Evaluating Information , The “Digital Divide” Neo-Luddite Views of Computers, Ref. A Gift of Fire – Fourth Edition (Chapter 7)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		Class Test, Assignment , Final Exam

	Lesson 2: Evaluating and Controlling Technology- Technology, and Quality of Life, Making Decisions About Technology Ref. A Gift of Fire – Fourth Edition (Chapter 7)	Brainstorming sessions, Classroom discussion, Voice over PPT, Lecture video, Lecture note, Open discussion		

CIE – Breakup (Theory) [60 marks]

Bloom's Criteria	Attendance (07)	Class Test (15)	Assignment (05)	Presentation (08)	Mid Exam (25)
Remember		05			05
Understand		05	02	02	20
Apply		05		03	00
Analyze			03		00
Evaluate					00
Create				03	00

SEE – Semester End Examination [40 marks] {Theory}

Bloom Criteria	Score for the Test
Remember	00
Understand	20
Apply	15
Analyze	00
Evaluate	05
Create	00

Appendix-1: Program outcomes

POs	Category	Program Outcomes
PO1	**Engineering Knowledge**	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis**	Identify, formulate, research the literature and analyze complex engineering problems and reach substantiated conclusions using first principles of mathematics, the natural sciences and the engineering sciences.
PO3	**Design/Development of Solutions**	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns.
PO4	**Investigations**	Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO5	**Modern tool usage**	Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society**	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO7	**Environment and sustainability**	Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics**	Apply ethical principles and commit to professional ethics, responsibilities and the norms of the engineering practice.
PO9	**Individual work and teamwork**	Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings.
PO10	**Communication**	Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.
PO11	**Project management and finance**	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member or a leader of a team to manage projects in multidisciplinary environments.

PO12	**Life Long Learning**	Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change.