University de Piura (UDEP)

Sillabus 2022-I

1. COURSE

CS281. Computing in Society (Mandatory)

2. GENERAL INFORMATION

2.1 Credits	:	2
2.2 Theory Hours	:	2 (Weekly)
2.3 Practice Hours	:	-
2.4 Duration of the period	:	16 weeks
2.5 Type of course	:	Mandatory
2.6 Modality	:	Face to face
2.7 Prerrequisites	:	None

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

It offers a wide vision of the ethical and professional aspects related to computing. The topics included cover ethical, social and political aspects. The moral dimensions of computing. The methods and tools of analysis. Administration of computer resources. Security and control of computer systems. Professional and ethical responsibilities. Intellectual property.

5. GOALS

- Make the student understand the importance of care and ethics in the transfer and use of information.
- To instill in the student that the trends of technological improvement should not lead to the degradation of the morals of society.

6. COMPETENCES

Nooutcomes

Nospecificoutcomes

7. TOPICS

Unit 1: History (2)	
Competences Expected: f,g	
Topics	**Learning Outcomes**
• Prehistory, the world before 1946 • History of computer hardware, software, networking • Pioneers of computing • History of the Internet	• Identify significant continuing trends in the history of the computing field [Familiarity] • Identify the contributions of several pioneers in the computing field [Familiarity] • Discuss the historical context for several programming language paradigms [Familiarity] • Compare daily life before and after the advent of personal computers and the Internet [Familiarity]
Readings : [LL04], [McL00]	

Unit 2: Social Context (4)	
Competences Expected: f,g	
Topics	**Learning Outcomes**
• Social implications of computing in a networked world • Impact of social media on individualism, collectivism and culture • Growth and control of the Internet • Often referred to as the digital divide, differences in access to digital technology resources and its resulting ramifications for gender, class, ethnicity, geography, and/or underdeveloped countries • Accessibility issues, including legal requirements • Context-aware computing	• Describe positive and negative ways in which computer technology (networks, mobile computing, cloud computing) alters modes of social interaction at the personal level [Familiarity] • Identify developers' assumptions and values embedded in hardware and software design, especially as they pertain to usability for diverse populations including under-represented populations and the disabled [Usage] • Interpret the social context of a given design and its implementation [Assessment] • Evaluate the efficacy of a given design and implementation using empirical data [Familiarity] • Summarize the implications of social media on individualism versus collectivism and culture [Familiarity] • Discuss how Internet access serves as a liberating force for people living under oppressive forms of government; explain how limits on Internet access are used as tools of political and social repression [Familiarity] • Analyze the pros and cons of reliance on computing in the implementation of democracy (eg delivery of social services, electronic voting) [Familiarity] • Describe the impact of the under-representation of diverse populations in the computing profession (eg, industry culture, product diversity) [Usage] • Explain the implications of context awareness in ubiquitous computing systems [Familiarity]
Readings : [LL04], [McL00]	

Unit 3: Analytical Tools (2)	
Competences Expected: f,g,ñ	
Topics	**Learning Outcomes**
• Ethical argumentation • Ethical theories and decision-making • Moral assumptions and values	• Evaluate stakeholder positions in a given situation [Familiarity] • Analyze basic logical fallacies in an argument [Usage] • Analyze an argument to identify premises and conclusion [Familiarity] • Illustrate the use of example and analogy in ethical argument [Familiarity] • Evaluate ethical/social tradeoffs in technical decisions [Familiarity]
Readings : [LL04], [McL00]	

Unit 4: Professional Ethics (4)	
Competences Expected: f,g,ñ	
Topics	**Learning Outcomes**
• Community values and the laws by which we live • The nature of professionalism including care, attention and discipline, fiduciary responsibility, andmentoring • Keeping up-to-date as a computing professional in terms of familiarity, tools, skills, legal and professional framework as well as the ability to self-assess and progress in the computing field • Professional certification, codes of ethics, conduct, and practice, such as the ACM/IEEE-CS, SE, AITP, IFIP and international societies • Accountability, responsibility and liability (e.g. software correctness, reliability and safety, as well as ethical confidentiality of cybersecurity professionals) • The role of the computing professional in public policy • Maintaining awareness of consequences • Ethical dissent and whistle-blowing • The relationship between regional culture and ethical dilemmas • Dealing with harassment and discrimination • Forms of professional credentialing • Acceptable use policies for computing in the workplace • Ergonomics and healthy computing environments • Time to market and cost considerations versus quality professional standards	• Identify ethical issues that arise in software development and determine how to address them technically and ethically [Usage] • Explain the ethical responsibility of ensuring software correctness, reliability and safety. [Assessment] • Describe the mechanisms that typically exist for a professional to keep up-to-date [Familiarity] • Describe the strengths and weaknesses of relevant professional codes as expressions of professionalism and guides to decision-making [Familiarity] • Analyze a global computing issue, observing the role of professionals and government officials in managing this problem [Familiarity] • Evaluate the professional codes of ethics from the ACM, the IEEE Computer Society, and other organizations [Familiarity] • Describe ways in which professionals may contribute to public policy [Familiarity] • Describe the consequences of inappropriate professional behavior [Usage] • Identify progressive stages in a whistle-blowing incident [Usage] • Identify examples of how regional culture interplays with ethical dilemmas [Familiarity] • Investigate forms of harassment and discrimination and avenues of assistance [Usage] • Examine various forms of professional credentialing [Usage] • Explain the relationship between ergonomics in computing environments and people's health [Usage] • Develop a computer usage/acceptable use policy with enforcement measures [Familiarity] • Describe issues associated with industries' push to focus on time to market versus enforcing quality professional standards [Usage]
Readings : [LL04], [McL00], [Edi09a], [Edi09b], [Edi10]	

Unit 5: Intellectual Property (4)	
Competences Expected: f,g,ñ	
Topics	**Learning Outcomes**
• Philosophical foundations of intellectual property • Intellectual property rights (cross-reference IM/Information Storage and Retrieval/intellectual property and protection) • Intangible digital intellectual property (IDIP) • Legal foundations for intellectual property protection • Digital rights management • Copyrights, patents, trade secrets, trademarks • Plagiarism • Foundations of the open source movement • Software piracy	• Discuss the philosophical bases of intellectual property [Assessment] • Discuss the rationale for the legal protection of intellectual property [Familiarity] • Describe legislation aimed at digital copyright infringements [Assessment] • Critique legislation aimed at digital copyright infringements [Familiarity] • Identify contemporary examples of intangible digital intellectual property [Assessment] • Justify uses of copyrighted materials [Assessment] [Familiarity] • Evaluate the ethical issues inherent in various plagiarism detection mechanisms [Familiarity] • Interpret the intent and implementation of software licensing [Familiarity] • Discuss the issues involved in securing software patents [Familiarity] • Characterize and contrast the concepts of copyright, patenting and trademarks [Familiarity] • Identify the goals of the open source movement [Assessment] • Identify the global nature of software piracy [Familiarity]
Readings : [LL04], [McL00], [Edi09a], [Edi09b], [Edi10]	

Unit 6: Privacy and Civil Liberties (4)	
Competences Expected: f,g,ñ	
Topics	**Learning Outcomes**
• Philosophical foundations of privacy rights • Legal foundations of privacy protection • Privacy implications of widespread data collection for transactional databases, data warehouses, surveillance systems, and cloud computing • Ramifications of differential privacy • Technology-based solutions for privacy protection • Privacy legislation in areas of practice • Civil liberties and cultural differences • Freedom of expression and its limitations	• Discuss the philosophical basis for the legal protection of personal privacy [Familiarity] • Evaluate solutions to privacy threats in transactional databases and data warehouses [Familiarity] • Describe the role of data collection in the implementation of pervasive surveillance systems (e.g., RFID, face recognition, toll collection, mobile computing). [Familiarity] • Describe the ramifications of differential privacy. [Familiarity] • Investigate the impact of technological solutions to privacy problems [Familiarity] • Critique the intent, potential value and implementation of various forms of privacy legislation [Familiarity] • Identify strategies to enable appropriate freedom of expression [Familiarity]
Readings : [LL04], [McL00], [Edi09a], [Edi09b], [Edi10]	

Unit 7: Security Policies, Laws and Computer Crimes (2)	
Competences Expected: f,g,ñ	
Topics	**Learning Outcomes**
• Examples of computer crimes and legal redress for computer criminals • Social engineering, identity theft and recovery • Issues surrounding the misuse of access and breaches in security • Motivations and ramifications of cyber terrorism and criminal hacking, "cracking" • Effects of malware, such as viruses, worms and Trojan horses • Crime prevention strategies • Security policies	• List classic examples of computer crimes and social engineering incidents with societal impact [Familiarity] • Identify laws that apply to computer crimes [Familiarity] • Describe the motivation and ramifications of cyber terrorism and criminal hacking [Familiarity] • Examine the ethical and legal issues surrounding the misuse of access and various breaches in security [Familiarity] • Discuss the professional's role in security and the trade-offs involved [Familiarity] • Investigate measures that can be taken by both individuals and organizations including governments to prevent or mitigate the undesirable effects of computer crimes and identity theft [Familiarity] • Write a company-wide security policy, which includes procedures for managing passwords and employee monitoring [Familiarity]
Readings : [LL04], [McL00], [Edi09a], [Edi09b], [Edi10]	

Unit 8: Economies of Computing (2)	
Competences Expected: f,g,ñ,o	
Topics	**Learning Outcomes**
• Monopolies and their economic implications • Effect of skilled labor supply and demand on the quality of computing products • Pricing strategies in the computing domain • The phenomenon of outsourcing and off-shoring software development; impacts on employment and on economics • Consequences of globalization for the computer science profession • Differences in access to computing resources and the possible effects thereof • Cost/benefit analysis of jobs with considerations to manufacturing, hardware, software, and engineering implications • Cost estimates versus actual costs in relation to total costs • Entrepreneurship: prospects and pitfalls • Network effect or demand-side economies of scale • Use of engineering economics in dealing with finances	• Summarize the rationale for antimonopoly efforts [Familiarity] • Identify several ways in which the information technology industry is affected by shortages in the labor supply [Familiarity] • Identify the evolution of pricing strategies for computing goods and services [Familiarity] • Discuss the benefits, the drawbacks and the implications of off-shoring and outsourcing [Familiarity] • Investigate and defend ways to address limitations on access to computing [Usage] • Describe the economic benefits of network effects [Usage]
Readings : [LL04], [McL00], [Edi09a], [Edi09b], [Edi10]	

8. WORKPLAN

8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. PLANNING

DATE	TIME	SESSION TYPE	PROFESSOR
See at EDU	See at EDU	See at EDU	See at EDU

10. EVALUATION SYSTEM

********* EVALUATION MISSING ********

11. BASIC BIBLIOGRAPHY

[Edi09a] Datamation Ediciones, ed. *Revista Datamation MC Ediciones*. 2009.

[Edi09b] Datamation Ediciones, ed. *Understanding the Digital Economy*. 2009.

[Edi10] Datamation Ediciones, ed. *Financial Times Mastering Information Management*. 2010.

[LL04] Kenneth C. Laudon and Jane P. Laudon. *Sistemas de Información Gerencial*. Prentice Hall, 2004.

[McL00] Raymond McLeod Jr. *Sistemas de Información Gerencial*. Prentice Hall, 2000.