

**San Pablo Catholic University (UCSP)**  
**Undergraduate Program in**  
**Computer Science**  
**SILABO**



**CS281. Computing in Society (Mandatory)**

**1. General information**

1.1 School	:	Ciencia de la Computación
1.2 Course	:	CS281. Computing in Society
1.3 Semester	:	8 <sup>vo</sup> Semestre.
1.4 Prerequisites	:	FG210. Moral . (5 <sup>th</sup> Sem)
1.5 Type of course	:	Mandatory
1.6 Learning modality	:	Virtual
1.7 Horas	:	2 HT;
1.8 Credits	:	2

**2. Professors**

**3. Course foundation**

Ofrece una visión amplia de los aspectos éticos y profesionales relacionados con la computación. Los tópicos que se incluyen abarcan los aspectos éticos, sociales y políticos. Las dimensiones morales de la computación. Los métodos y herramientas de análisis. Administración de los recursos computacionales. Seguridad y control de los sistemas computacionales. Responsabilidades profesionales y éticas. Propiedad intelectual.

**4. Summary**

1. History 2. Social Context 3. Analytical Tools 4. Professional Ethics 5. Intellectual Property 6. Privacy and Civil Liberties 7. Security Policies, Laws and Computer Crimes 8. Economies of Computing

**5. Generales Goals**

- Hacer que el alumno entienda la importancia del cuidado y la ética en la transferencia y uso de la información.
- Inculcar en el alumno que las tendencias de mejoramiento de la tecnología, no debe ser llevada a degradar la moral de la sociedad.

**6. Contribution to Outcomes**

This discipline contributes to the achievement of the following outcomes:

- f) An ability to communicate effectively. (**Familiarity**)
- g) The broad education necessary to understand the impact of computing solutions in a global, economic, environmental, and societal context. (**Usage**)
- ñ) (**Usage**)
- o) Understand that the formation of a good professional is not disconnected or opposed but rather contributes to genuine personal growth. This requires the assimilation of solid values, broad spiritual horizons and a deep vision of the cultural environment. (**Usage**)

**7. Content**

<b>UNIT 1: History (2)</b>	
<b>Competences: f,g</b>	
<b>Content</b>	<b>Generales Goals</b>
<ul style="list-style-type: none"> <li>• Prehistory, the world before 1946</li> <li>• History of computer hardware, software, networking</li> <li>• Pioneers of computing</li> <li>• History of the Internet</li> </ul>	<ul style="list-style-type: none"> <li>• Identify significant continuing trends in the history of the computing field [Familiarity]</li> <li>• Identify the contributions of several pioneers in the computing field [Familiarity]</li> <li>• Discuss the historical context for several programming language paradigms [Familiarity]</li> <li>• Compare daily life before and after the advent of personal computers and the Internet [Familiarity]</li> </ul>
<b>Readings: K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000)</b>	

<b>UNIT 2: Social Context (4)</b>	
<b>Competences: f,g</b>	
<b>Content</b>	<b>Generales Goals</b>
<ul style="list-style-type: none"> <li>• Social implications of computing in a networked world</li> <li>• Impact of social media on individualism, collectivism and culture</li> <li>• Growth and control of the Internet</li> <li>• 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</li> <li>• Accessibility issues, including legal requirements</li> <li>• Context-aware computing</li> </ul>	<ul style="list-style-type: none"> <li>• Describe positive and negative ways in which computer technology (networks, mobile computing, cloud computing) alters modes of social interaction at the personal level [Familiarity]</li> <li>• 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]</li> <li>• Interpret the social context of a given design and its implementation [Assessment]</li> <li>• Evaluate the efficacy of a given design and implementation using empirical data [Familiarity]</li> <li>• Summarize the implications of social media on individualism versus collectivism and culture [Familiarity]</li> <li>• 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]</li> <li>• Analyze the pros and cons of reliance on computing in the implementation of democracy (eg delivery of social services, electronic voting) [Familiarity]</li> <li>• Describe the impact of the under-representation of diverse populations in the computing profession (eg, industry culture, product diversity) [Usage]</li> <li>• Explain the implications of context awareness in ubiquitous computing systems [Familiarity]</li> </ul>
<b>Readings: K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000)</b>	

<b>UNIT 3: Analytical Tools (2)</b>	
<b>Competences: f,g,ñ</b>	
<b>Content</b>	<b>Generales Goals</b>
<ul style="list-style-type: none"> <li>• Ethical argumentation</li> <li>• Ethical theories and decision-making</li> <li>• Moral assumptions and values</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate stakeholder positions in a given situation [Familiarity]</li> <li>• Analyze basic logical fallacies in an argument [Usage]</li> <li>• Analyze an argument to identify premises and conclusion [Familiarity]</li> <li>• Illustrate the use of example and analogy in ethical argument [Familiarity]</li> <li>• Evaluate ethical/social tradeoffs in technical decisions [Familiarity]</li> </ul>
<b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000)	

UNIT 4: Professional Ethics (4)	
Competences: f,g,n̄	
Content	Generales Goals
<ul style="list-style-type: none"> <li>• Community values and the laws by which we live</li> <li>• The nature of professionalism including care, attention and discipline, fiduciary responsibility, and mentoring</li> <li>• 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</li> <li>• Professional certification, codes of ethics, conduct, and practice, such as the ACM/IEEE-CS, SE, AITP, IFIP and international societies</li> <li>• Accountability, responsibility and liability (e.g. software correctness, reliability and safety, as well as ethical confidentiality of cybersecurity professionals)</li> <li>• The role of the computing professional in public policy</li> <li>• Maintaining awareness of consequences</li> <li>• Ethical dissent and whistle-blowing</li> <li>• The relationship between regional culture and ethical dilemmas</li> <li>• Dealing with harassment and discrimination</li> <li>• Forms of professional credentialing</li> <li>• Acceptable use policies for computing in the workplace</li> <li>• Ergonomics and healthy computing environments</li> <li>• Time to market and cost considerations versus quality professional standards</li> </ul>	<ul style="list-style-type: none"> <li>• Identify ethical issues that arise in software development and determine how to address them technically and ethically [Usage]</li> <li>• Explain the ethical responsibility of ensuring software correctness, reliability and safety. [Assessment]</li> <li>• Describe the mechanisms that typically exist for a professional to keep up-to-date [Familiarity]</li> <li>• Describe the strengths and weaknesses of relevant professional codes as expressions of professionalism and guides to decision-making [Familiarity]</li> <li>• Analyze a global computing issue, observing the role of professionals and government officials in managing this problem [Familiarity]</li> <li>• Evaluate the professional codes of ethics from the ACM, the IEEE Computer Society, and other organizations [Familiarity]</li> <li>• Describe ways in which professionals may contribute to public policy [Familiarity]</li> <li>• Describe the consequences of inappropriate professional behavior [Usage]</li> <li>• Identify progressive stages in a whistle-blowing incident [Usage]</li> <li>• Identify examples of how regional culture interplays with ethical dilemmas [Familiarity]</li> <li>• Investigate forms of harassment and discrimination and avenues of assistance [Usage]</li> <li>• Examine various forms of professional credentialing [Usage]</li> <li>• Explain the relationship between ergonomics in computing environments and people's health [Usage]</li> <li>• Develop a computer usage/acceptable use policy with enforcement measures [Familiarity]</li> <li>• Describe issues associated with industries' push to focus on time to market versus enforcing quality professional standards [Usage]</li> </ul>
<b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000), Ediciones (2009a), Ediciones (2009b), Ediciones (2010)	

<b>UNIT 5: Intellectual Property (4)</b>	
<b>Competences: f,g,ñ</b>	
<b>Content</b>	<b>Generales Goals</b>
<ul style="list-style-type: none"> <li>• Philosophical foundations of intellectual property</li> <li>• Intellectual property rights (cross-reference IM/Information Storage and Retrieval/intellectual property and protection)</li> <li>• Intangible digital intellectual property (IDIP)</li> <li>• Legal foundations for intellectual property protection</li> <li>• Digital rights management</li> <li>• Copyrights, patents, trade secrets, trademarks</li> <li>• Plagiarism</li> <li>• Foundations of the open source movement</li> <li>• Software piracy</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the philosophical bases of intellectual property [Assessment]</li> <li>• Discuss the rationale for the legal protection of intellectual property [Familiarity]</li> <li>• Describe legislation aimed at digital copyright infringements [Assessment]</li> <li>• Critique legislation aimed at digital copyright infringements [Familiarity]</li> <li>• Identify contemporary examples of intangible digital intellectual property [Assessment]</li> <li>• Justify uses of copyrighted materials [Assessment] [Familiarity]</li> <li>• Evaluate the ethical issues inherent in various plagiarism detection mechanisms [Familiarity]</li> <li>• Interpret the intent and implementation of software licensing [Familiarity]</li> <li>• Discuss the issues involved in securing software patents [Familiarity]</li> <li>• Characterize and contrast the concepts of copyright, patenting and trademarks [Familiarity]</li> <li>• Identify the goals of the open source movement [Assessment]</li> <li>• Identify the global nature of software piracy [Familiarity]</li> </ul>
<p><b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000), Ediciones (2009a), Ediciones (2009b), Ediciones (2010)</p>	

UNIT 6: Privacy and Civil Liberties (4)	
Competences: f,g,ñ	
Content	Generales Goals
<ul style="list-style-type: none"> <li>• Philosophical foundations of privacy rights</li> <li>• Legal foundations of privacy protection</li> <li>• Privacy implications of widespread data collection for transactional databases, data warehouses, surveillance systems, and cloud computing</li> <li>• Ramifications of differential privacy</li> <li>• Technology-based solutions for privacy protection</li> <li>• Privacy legislation in areas of practice</li> <li>• Civil liberties and cultural differences</li> <li>• Freedom of expression and its limitations</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the philosophical basis for the legal protection of personal privacy [Familiarity]</li> <li>• Evaluate solutions to privacy threats in transactional databases and data warehouses [Familiarity]</li> <li>• Describe the role of data collection in the implementation of pervasive surveillance systems (e.g., RFID, face recognition, toll collection, mobile computing). [Familiarity]</li> <li>• Describe the ramifications of differential privacy. [Familiarity]</li> <li>• Investigate the impact of technological solutions to privacy problems [Familiarity]</li> <li>• Critique the intent, potential value and implementation of various forms of privacy legislation [Familiarity]</li> <li>• Identify strategies to enable appropriate freedom of expression [Familiarity]</li> </ul>
<p><b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000), Ediciones (2009a), Ediciones (2009b), Ediciones (2010)</p>	

UNIT 7: Security Policies, Laws and Computer Crimes (2)	
Competences: f,g,ñ	
Content	Generales Goals
<ul style="list-style-type: none"> <li>• Examples of computer crimes and legal redress for computer criminals</li> <li>• Social engineering, identity theft and recovery</li> <li>• Issues surrounding the misuse of access and breaches in security</li> <li>• Motivations and ramifications of cyber terrorism and criminal hacking, “cracking”</li> <li>• Effects of malware, such as viruses, worms and Trojan horses</li> <li>• Crime prevention strategies</li> <li>• Security policies</li> </ul>	<ul style="list-style-type: none"> <li>• List classic examples of computer crimes and social engineering incidents with societal impact [Familiarity]</li> <li>• Identify laws that apply to computer crimes [Familiarity]</li> <li>• Describe the motivation and ramifications of cyber terrorism and criminal hacking [Familiarity]</li> <li>• Examine the ethical and legal issues surrounding the misuse of access and various breaches in security [Familiarity]</li> <li>• Discuss the professional’s role in security and the trade-offs involved [Familiarity]</li> <li>• 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]</li> <li>• Write a company-wide security policy, which includes procedures for managing passwords and employee monitoring [Familiarity]</li> </ul>
<p><b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000), Ediciones (2009a), Ediciones (2009b), Ediciones (2010)</p>	

UNIT 8: Economies of Computing (2)	
Competences: f,g,o,ñ	
Content	Generales Goals
<ul style="list-style-type: none"> <li>• Monopolies and their economic implications</li> <li>• Effect of skilled labor supply and demand on the quality of computing products</li> <li>• Pricing strategies in the computing domain</li> <li>• The phenomenon of outsourcing and off-shoring software development; impacts on employment and on economics</li> <li>• Consequences of globalization for the computer science profession</li> <li>• Differences in access to computing resources and the possible effects thereof</li> <li>• Cost/benefit analysis of jobs with considerations to manufacturing, hardware, software, and engineering implications</li> <li>• Cost estimates versus actual costs in relation to total costs</li> <li>• Entrepreneurship: prospects and pitfalls</li> <li>• Network effect or demand-side economies of scale</li> <li>• Use of engineering economics in dealing with finances</li> </ul>	<ul style="list-style-type: none"> <li>• Summarize the rationale for antimonopoly efforts [Familiarity]</li> <li>• Identify several ways in which the information technology industry is affected by shortages in the labor supply [Familiarity]</li> <li>• Identify the evolution of pricing strategies for computing goods and services [Familiarity]</li> <li>• Discuss the benefits, the drawbacks and the implications of off-shoring and outsourcing [Familiarity]</li> <li>• Investigate and defend ways to address limitations on access to computing [Usage]</li> <li>• Describe the economic benefits of network effects [Usage]</li> </ul>
<b>Readings:</b> K. C. Laudon and J. P. Laudon (2004), McLeod Jr (2000), Ediciones (2009a), Ediciones (2009b), Ediciones (2010)	

8. Methodology
<p>El profesor del curso presentará clases teóricas de los temas señalados en el programa propiciando la intervención de los alumnos.</p> <p>El profesor del curso presentará demostraciones para fundamentar clases teóricas.</p> <p>El profesor y los alumnos realizarán prácticas</p> <p>Los alumnos deberán asistir a clase habiendo leído lo que el profesor va a presentar. De esta manera se facilitará la comprensión y los estudiantes estarán en mejores condiciones de hacer consultas en clase.</p>

9. Assessment
<p><b>Continuous Assessment 1</b> : 20 %</p> <p><b>Partial Exam</b> : 30 %</p> <p><b>Continuous Assessment 2</b> : 20 %</p> <p><b>Final exam</b> : 30 %</p>

## References

Ediciones, Datamation, ed. (2009a). *Revista Datamation MC Ediciones*.



Ediciones, Datamation, ed. (2009b). *Understanding the Digital Economy*.  
Ediciones, Datamation, ed. (2010). *Financial Times Mastering Information Management*.  
Laudon, Kenneth C. and Jane P. Laudon (2004). *Sistemas de Información Gerencial*. Prentice Hall.  
McLeod Jr, Raymond (2000). *Sistemas de Información Gerencial*. Prentice Hall.