TEC2211 TECHNOLOGY, ETHICS & HUMAN RIGHTS

Hours per Semester				Weighted Total Mark	Weighted Exam Mark	Weighted Continuous Assessment Mark	Credit Units
LH	PH	TH	CH	WTM	WEM	WCM	CU
45	0	00	45	100	60	40	3

Rationale

The course is meant to provide students with knowledge on social aspects of society. Since engineers solve problems faced by the society, it is important for them to understand the characteristics and behaviour of the community.

Course Objectives

By the end of the course students should be able to:

- Understand cultural, conflict and control, dynamics of social change and the impact of the technology on the environment
- Understand rural and urban sociology in developing countries
- Understand of the relation of technology's impacts on society, the ethical background underpinning the decision making and its usage in technology.

Detailed Course Content:

Contemporary Philosophy: **[20 Hours]**

Beginnings: logic and mathematics; Philosophical analysis: Moore and Russell; Alternatives: realism, logical positivism; Postmodernism: critical theory; Feminism: theory, ethics.

Engineering ethics: **[25 Hours]**

minimum requirements for the practice of engineering; responsibilities of engineering institutions;safety and liability, professional responsibility to clients and employers , whistle blowing, codes of ethics, career choice and legal obligations. General ethical theory, concrete engineering case studies; software liability; bribery, conflict of interest dilemma, protection of intellectual property, privacy of electronic mail, ethics of testifying as a partisan expert witness, the preferential treatment of women in engineering, the morality of pollution in less developed countries with weak environmental standards.

Principles of human rights: Civil rights and civil liberties, children's, women's rights; Children and family rights; right to education; Regulatory law: public interest law: Gender discrimination issues: employment discrimination; employment law; poverty law; gender issues; importance of gender in social and economic patterns; social welfare.

Mode of Delivery

The course will be taught by using lectures, tutorials and assignments.

Assessment

Assignments, tests and final examination. Their relative contributions to the final grade are :

Requirement	**Percentage contribution**
Course work (Assignments, tests)	40%
Final examination	60%
Total	**100%**

Learning Outcomes

On completing this course the student should be able to:

- Identify some contributors to social and professional issues and relate their achievements to the knowledge area; Contrast between ethical and legal issues; Contrast between a patent and

a copyright; Identify some ways of credentialing a person to practice computer engineering; Describe issues that contrast risk issues with safety issues; Identify some issues in computer engineering that address privacy; Describe whistle blowing and the conflicts between ethics and practice that may result from doing so; and Describe how computer engineering uses or benefits from social and professional issues.

- Interpret the social context of a particular implementation; Identify assumptions and values embedded in a particular design; Evaluate a particular implementation using empirical data; Describe positive and negative ways in which computing altars the modes of interaction between people; and Explain why computing/network access is restricted in some countries

- Analyze an argument to identify premises and conclusion; illustrate the use of example, analogy, and counter-analogy in ethical argument; detect use of basic logical fallacies in an argument; identify stakeholders in an issue and our obligations to them; and articulate the ethical tradeoffs in a technical decision.
- Identify progressive stages in a whistle-blowing incident; Specify the strengths and weaknesses of relevant professional codes as expressions of professionalism and guides to decision-making; Provide arguments for and against licensure in non-engineering professions; Identify ethical issues that arise in software development and determine how to address them technically and ethically; Develop a computer use policy with enforcement measures;
- Explain the limitations of testing as a means to ensure correctness; recognize the importance of product safety when designing computer systems; describe the differences between correctness, reliability, and safety; recognize unwarranted assumptions of statistical independence of errors; discuss the potential for hidden problems in reuse of existing components.
- Distinguish among patent, copyright, and trade secret protection; discuss the legal background of copyright in national and international law; explain how patent and copyright laws may vary internationally; and outline the historical development of software patents.
- Summarize the legal bases for the right to privacy and freedom of expression in one's own nation; discuss how those concepts vary from country to country; describe current computer-based threats to privacy; and explain how the internet may change the historical balance in protecting freedom of expression.
- Outline the technical basis of viruses and denial-of-service attacks; enumerate techniques to combat "cracker" attacks; discuss several different "cracker" approaches and motivations; and identify the professional's role in security and the tradeoffs involved.
- Describe the assessment of total job costs; evaluate the risks of entering one's own business; apply engineering economic principles when considering fiscal arrangements; summarize the rationale for antimonopoly efforts; describe several ways in which shortages in the labor supply affect the information technology industry; and suggest and defend ways to address limitations on access to computing.
- Summarize the basic concepts of relativism, utilitarianism, and deontological theories; recognize the distinction between ethical theory and professional ethics; identify the weaknesses of the "hired agent" approach, strict legalism, naïve egoism, and naïve relativism as ethical frameworks

Method of Teaching /Delivery

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Final examination	60%
Total	**100%**

Recommended and Reference Books

[1] Kenneth E. Himma, Herman T. Tavani, 2008. The Handbook of Information and Computer Ethics. Wiley-Interscience. ISBN-10: 0471799599 , ISBN-13: 978-0471799597

[2] J. Fernando Naveda and Stephen B. Seidman, 2006. *IEEE Computer Society Real-World Software Engineering Problems: A Self-Study Guide for Today's Software Professional (Practitioners).* Wiley-IEEE Computer Society Pr. ISBN-10: 0471710512 , ISBN-13: 978-0471710516

[3] Winn Schwartau, D. L. Busch, 2001. *Internet & Computer Ethics for Kids: (and Parents & Teachers Who Haven't Got a Clue.)*. Interpact Press. ISBN-10: 0962870056, ISBN-13: 978-
0962870057

[4] Mike W. Martin, Roland Schinzinger, 2004. *Ethics in Engineering*. McGraw-Hill Science/Engineering/Math; 4 Edition. ISBN-10: 0072831154, ISBN-13: 978-0072831153

[5] Caroline Whitbeck, Woodie C. Flowers, 1998. *Ethics in Engineering Practice and Research.* Cambridge University Press ISBN-10: 0521479444, ISBN-13: 978-0521479448

[6] Gail Dawn Baura, 2006.*Engineering Ethics: An Industrial Perspective*. Academic Press; 1 Edition.ISBN-10: 012088531X, ISBN-13: 978-0120885312

Possible Lecturers:

Mr. D. Semukuutu