Template of Course Specification

Faculty: CIT
Department: CS
Program: B.SC(Software Engineering)

I.	**General information about the course :**					
1.	**Course Title:**	Computing Ethics				
2.	**Course Code and Number :**	SEL04				
3.	**Credit Hours: 3**	**Lecture**	**Seminar/Tutorial**	**Practical**	**Training**	**Total**
		3		**0**		**0**
4.	**Study Level and Semester:**	Level 3 or 4 / Semester 6 or 7				
5.	**Pre-requisites (if any):**	**Computer Fundamentals (CIT04)**				
6.	**Co-requisites (if any) :**	---				
7.	**Program in which the course is offered**	B.SC(Software Engineering)				
8.	**Teaching Language:**	English				
9.	**Study System :**	Semester Based				
0.	**Prepared by :**	Course Facilitator (Bridget Shakesy)				
1.	**Approval date :**					
2.	**Approved by:**	Department				

II. Course Description:

A Computing Ethics course is not about preaching virtue to encourage immoral and amoral students to adopt a certain established set of beliefs and behavior. It is intended, rather, to increase the ability of concerned engineers, managers and citizens, to first recognize and then responsibly confront moral issues raised by technological activity. The goal is to foster moral autonomy, i.e Professional Practice is concerned with the knowledge, skills, and attitudes that software engineers must possess to practice software engineering in a professional, responsible, and ethical manner. The products produced by software engineers affect the lives and livelihood of the clients and users of those products. Because of their roles in developing software systems, software engineers have significant opportunities to do good or cause harm, to enable others to do good or cause harm, or to influence others to do good or cause harm. Hence, software engineers need to act in an ethical and professional manner

III. Course Aims

This Course aims to:

- To explore about the social context of a profession
- To provide knowledge about loyalties to different principles of philosophical foundations
- To identify and develop action plan that can overcome problems such as computer crime and also to develop professional code of ethics .
- To appreciate the social implications of decisions and responsibilities of a software engineer and understand the ethical dimensions of the software industry as applied to specific issues such as software correctness, privacy and security, integrity, privacy .
- To impose the skills of management of intellectual property including aspects specific to the software industry, such as software patents and open source software.
- To provide a conducive working environment in terms of employees' privacy, health and security and to and to be aware of precautionary principle and environmental impact
- To identify the attitudes and values that are appropriate to professional users, developers of software and to analyze ethical conflicts facing computing professionals in ethical decision making.
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VI. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A1. Understand the principles and theories of mathematics, programming, algorithms and its complexities.	----
A2. Distinguish between selected canonical forms of operating systems and computer hardware, architecture and organization.	-----
A3.. Understand the use and impact of Information and Communication Technology (ICT) by recognizing the concepts of enterprise information management and networking.	a1. Know about computerized society and how ethical theories can help for society and Identify correctly the potential for ethical issues /causes surrounding computers and critical social issues /causes and those moral rules and common elements of modern day statute and the types of

	computer crimes.
A4. Understand the software process life cycles, for small, medium and large software projects, and different approaches of software development, software project management, risk and quality management, and human-computer interaction.	---
A5. Recognize the social, professional, legal, ethical, and cultural issues involved in the use of computer technology	a1.Know about computerized society and how ethical theories can help for society and Identify correctly the potential for ethical issues /causes surrounding computers and critical social issues /causes and those moral rules and common elements of modern day statute and the types of computer crimes. a2.Comprehend the employment issues involved both in being an employee and offering contract services in software development field, including legal responsibilities, and negotiating and managing contracts in the client-consultant relationship and depict the digital divide and its consequences of inequality of outcomes

Intellectual Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B1. Determine and analyze criteria, specifications and requirements appropriate to specific computing problems and formulate	b1.Examine a variety of legislative, societal, regulatory business compliance and ethical

strategies to solve them.	obligations and standards and to identify important factors that could have affected the resolution of issues such as software correctness, privacy and security, integrity, privacy, and detail these issues and factors in a comprehensive "impact assessment" for the software product.
B2. Differentiate the various methods of computational thinking, determining their wide relevance and applicability within other domains in everyday life, and being able to employ them in different conditions.	b2.Identify the skills required for enterprise, initiative and creativity thus to manage the intellectual properties including aspects specific to the software industry, such as software patents and open source software. b3.Appreciate and develop Skills required for collaborative and multidisciplinary work , respect for diversity and establish the nature of key drivers within the industry, and the current trends within the industry and understand interconnections various other industry sectors
B3. Choose the most appropriate methods and tools including deploying appropriate theory, practices, and tools for the specification, design, implementation, and maintenance as well as the evaluation of computer-based systems.	----
B4. Criticize systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	b1.Examine a variety of legislative, societal, regulatory business compliance and ethical obligations and standards and to identify important factors that could have affected the

	resolution of issues such as software correctness, privacy and security, integrity, privacy, and detail these issues and factors in a comprehensive “impact assessment” for the software product.

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1. Apply fundamental concepts of computer science, software engineering, human-computer interaction, science and mathematics in the modeling and design of computer systems.	-----
C2. Develop a wide range of software through all stages of their life cycle, namely problem analysis, requirements specification, design, construction; verification and evolution using appropriate methods and tools.	------
C3. Operate computing equipment and software systems effectively and efficiently.	c1.To implement ethical practice and social responsibility and to emphasize the professional codes of ethics
C4. Evaluate software process and artifacts in terms of software quality and models.	----
C5. Plan, undertake, and monitor software projects.	-----

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D1. Communication skills: Make succinct presentations to a range of audiences about technical problems and their solutions. This may involve face-to-face, written communication or electronic communication.	d2.Develop and present a project outcome that demonstrates understanding of, and engagement with, the major issues, challenges and opportunities presented to software professionals working in a contemporary context.

D2. Teamwork: Be able to work effectively as a member of a development team.	d1.To develop capability for analytical and critical thinking and for creative problem solving effectively well-informed and well-reasoned positions on these issues, verbally (oral presentation of cases) and in writing (project report) by applying critical thinking reasoning skills, research skills on a series of weekly case studies or activities.
D3. Numeracy skills: Understand and explain the quantitative dimensions of a problem.	---
D4. Self-management skills: Manage one's own learning and development, including time management and organizational skills.	d1.To develop capability for analytical and critical thinking and for creative problem solving effectively well-informed and well-reasoned positions on these issues, verbally (oral presentation of cases) and in writing (project report) by applying critical thinking reasoning skills, research skills on a series of weekly case studies or activities. d2.Develop and present a project outcome that demonstrates understanding of, and engagement with, the major issues, challenges and opportunities presented to software professionals working in a contemporary context.
D5. Professional development skills: Keep abreast of current developments in the discipline to continue one's own professional development.	d1.To develop capability for analytical and critical thinking and for creative problem solving effectively well-informed and well-reasoned positions on these issues, verbally (oral presentation of cases) and in writing (project report) by applying critical thinking reasoning skills, research skills on a series of weekly case studies or activities

VI. Alignment of CILOs to Teaching and Assessment Strategies

First: Alignment of Knowledge and Understanding CILOs

Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
a1.Know about computerized society and how ethical theories can help for society and Identify correctly the potential for ethical issues /causes surrounding computers and critical social issues /causes and those moral rules and common elements of modern day statute and the types of computer crimes.	**Direct teaching (Lectures, problem solving, group discussions)** **Case studies -**	

a2 . Comprehend the employment issues involved both in being an employee and offering contract services in software development field, including legal responsibilities, and negotiating and managing contracts in the client-consultant relationship and depict the digital divide and its consequences of inequality of outcomes	**Brain Storming** **Assignments** **Experimental learning** **Presentation** **Survey Presentation** **students –led seminar** **Role change playing** **E-learning, M-learning** **Self learning** **Indirect learning(web resources)**	**Written Exam, Observation, Quiz, Presentation , Assignments ,quizzes ,presentation, reports Sheets, Problem analysis ,Case study , Presentation, Seminars, Report**
a3. To emphases on the skills involved in scholarly enquiry that oblige engineers to keep up to date and rigorously apply the latest methods and technology and to identify professional issues ,variety of roles and responsibilities of software engineers in organizations and society to develop analytical skills for determining what to do in ethical decision making or what the likely impacts the computer or practically in the software projects developed.		

Second: Alignment of Intellectual Skills CILOs		
Intellectual Skills CILOs	**Teaching Strategies**	**Assessment Strategies**
b1.Examine a variety of legislative, societal,		**Written Exam, Observation,**

regulatory business compliance and ethical obligations and standards and to identify important factors that could have affected the resolution of issues such as software correctness, privacy and security, integrity, privacy, and detail these issues and factors in a comprehensive "impact assessment" for the software product.	**Case studies - Brain Storming** **Assignments** **Experimental learning** **Presentation** **Survey Presentation** **students –led seminar** **Role change playing** **E-learning, M-learning** **Self learning** **Indirect learning(web resources)**	**Quiz, Presentation , Assignments ,quizzes ,presentation, reports Sheets, Problem analysis ,Case study , Presentation, Seminars,** **Report**
b2.Identify the skills required for enterprise, initiative and creativity thus to manage the intellectual properties including aspects specific to the software industry, such as software patents and open source software.		
b3. Appreciate and develop Skills required for collaborative and multidisciplinary work , respect for diversity and establish the nature of key drivers within the industry, and the current trends within the industry and understand interconnections various other industry sectors		

Third: Alignment of Professional and Practical Skills CILOs

Professional and Practical Skills CILOs	Teaching Strategies	Assessment Strategies
c1.To implement ethical practice and social responsibility and to emphasize the professional codes of ethics	**Case studies - Brain Storming** **Assignments** **Experimental learning** **Presentation** **Survey Presentation** **students –led seminar** **Role change playing** **E-learning, M-learning** **Self learning** **Indirect learning(web resources)**	**Report** **Worksheets** **Report + Presentation** **Observations** **Group-self evaluations** **Iterative peer reviews (for successive drafts role play, and Debate Software project plan – presentation and document Software product**

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	**Teaching Strategies**	**Assessment Strategies**
d1.To develop capability for analytical and critical thinking and for creative problem solving effectively well-informed and well-reasoned positions on these issues, verbally (oral presentation of cases) and in writing (project report) by applying critical thinking reasoning skills, research skills on a series of weekly case studies or activities	**Grouping** **Tips** **Notes** **Case Study in software projects developed.**	**Presentation** **Student–led seminars** **Group-self evaluations** **Iterative peer reviews (for successive drafts role play, and Debate Software project plan – presentation and document Software product**
d2. Develop and present a project outcome that		

demonstrates understanding of, and engagement with, the major issues, challenges and opportunities presented to software professionals working in a contemporary context.		**Report**

VII. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs

Topics/Units of Course Contents					
First: Theoretical Aspects					
No.	**Course Topics/Units**	**Sub-topics**	**No. of Weeks**	**Contact Hours**	**CILOs**
1	Social context of computing	1.1 Society in the computer era 1.2 Ethics and computing professional 1.3 Computer and social change 1.4 Autonomy and decision making 1.5 Accessing and digital divide	1	3	a1,a2,a3
2	Theoretical Underpinnings of Ethics :Methods and tools of analysis of ethical arguments Philosophical Foundations of Ethics	2.1 Ethical Relativism, Absolutism and Pluralism 2.2 The Ethics of Conscience. Ethical Egoism. 2.2.1.The Ethics of Duty. The Ethics of Respect 2.3 The Ethics of Consequences: Utilitarianism 2.3.1 The Ethics of Rights. The Ethics of Justice 2.4 The Ethics of Character. Ethics and Gender	2	6	a1
3	Computer crime	3.1 The increased number of	2	6	a1,b1,c1

		computer crime 3.2 Computer criminal profile and crime victims 3.3 The rising of computer security 3.4 software piracy 3.4.1 Problems of software piracy 3.4.2 taxonomy of software piracy 3.4.3 Trends in software piracy 3.5 Hacking and virus attack 3.5.1 Why hackers are criminal 3.5.2 Virus Attack 3.5.3 Ethical issues in hacking and virus 3.6 Against crime with technology			
4	Risks and liabilities in software development	4.1 Risk Assessment in Socio technical Systems 4.2 Agile Software Processes, Agile in Practice :ethical issues 4.3 Precautionary principle in engineering and science 4.4 Open Source Software 4.5 Liability and responsibility distribution	1	3	a3,b1,b2
	MIDTERM(week.no.7)				
5	Professional Ethics and moral reasoning	5.1 Introduction to ethics- Moral issues and law 5.2 professional ethics- overview 5.3 Professional relationship 5.4 Responsibility facing conflicts 5. 5 Professional and ethical responsibilities :Code of ethics	1	3	a2,a3,b1,c1
6	Social implications of the Internet	Cyber law mechanism and implementation	1	3	a1,b1
7	Managing	7.1 Introduction to intellectual	1	3	b2

	Innovation - Intellectual Property	property 7.2 Copyrights and patents 7.3Why intellectual property has to be protected?			
8	Privacy and civil liberties	8.1 Protecting employees' privacy 8.2 Protecting national security 8.3 Privacy and employees' efficiency 8.4 Legal Perspectives on System Development 8.5 Industrial Relations and Employment Contracts	1	3	a2,a3,b1,c1
9	Environmental Ethics	9.1 Computer and type of works 9.2 Adapting to today's generation working style 9.3 Danger in the workplace, Health issues ,Personnel threats, terrorism and disaster	1	3	a1,a2,b3,c1
10	**PRESENTATION(week.no.13)**				
11	**REVISION(week.no.14)**				
12	**FINAL EXAM**				
Total number of weeks and hours			**12**	**36**	

I. Tasks and Assignments :

No.	Task/Assignment	CILOs	Week due	Mark
1	Assignment 1	a1,a2,a3	4	10
2	Assignment 2	b1,b3	10	10
3	Assignment 3	b2,c1	12	10
4	Students–led seminars	d1,d2	8, 13	10
5	case discussion/activities	d1,d2	2 ,5,8,11	10

I. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Quizzes	3 , 6, 10	10+10+10	5%	--
2	Research based Assignments	4 & 11,13	10+10+10	15%	
3	Midterm exam	7	25	10%	--
4	Case studies/ activities	2, 5,8,12	5+5+5+5	10%	
4	students-led seminars	8,13	10	10%	
6	Final exam	15	100	50%	--
Total			100		

I. Learning Resources :

(Author, (Year), Book Title, Edition, Publisher, Country of publishing)

Textbooks-not more than 2

F. Bott, A. Coleman, J. Eaton, D. Rowland, *Professional Issues in Software Engineering, 3rd Edition*, UCL Press, 2001/latest

R. Ayres, *The Essence of Professional Issues in Computing*, Prentice Hall, 1999.

Essential References-not less than 4

Kevin Bowyer , Computing ethics .

Forester, T., and Morrison, P. Cautionary Tales and Ethical Dilemmas in Computing. (2nd Edition). The MIT Publication.

Johnson, G. Deborah . Computer Ethics. (4th Edition). Prentice Hall, NJ.

I. Sommerville, *Software Engineering, 6th edition*, Addison-Wesley, 2001.

T. Gilb, *Principles of Software Engineering Management*, Addison-Wesley, 1988.

Electronic Materials and Web Sites

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
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- Case studies with a notable software engineering failure. The following websites can be referred.
  - http://computingcases.org/case_materials/case_materials.html
  - http://www.savive.com/casestudy/index.html
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- Myers, C., and others, *The Responsible Software Engineer*, Springer-Verlag, 1997
- Myers, C., *Professional Awareness in Software Engineering* ,McGraw-Hill, 1995
- Professional Issues in Software Engineering, pp. 199–205. London: Pitman . BRITISH COMPUTER SOCIETY (1999) 'Ethics Committee "Whistle-blowing" Working Party ... alh.sagepub.com
- www.ieee.org/ethics/codes/IEEE_code.pdf
- http://www.acm.org/about/code-of-ethics
- http://www.bcs.org/upload/pdf/conduct.pdf

V.	Course Policies (To be determined by Faculty Deanship):
Based on university regulations, the following aspects should be figured out:	
1.	**(**Class Attendance**) :**
2.	**(**Tardy**) :**
3.	**(**Exam Attendance/Punctuality**) :**
4.	**(**Assignments & Projects**) :**
5.	**(**Cheating**) :**
6.	**(**Plagiarism**) :**
7.	**(**Other policies**) :**

Template of Course Syllabus

Faculty : Computing and Information technology

Department : Information technology

Program : BIT

I. General information about the course instructor :							
Name		Office Hours(3 Hours Weekly)					
Location & phone number		Sat	Sun	Mon	Tue	Wed	Thu
Email							

II. General information about the course:						
1.	Course Title :	Computing Ethics				
2.	Course Code and Number :	SEL04				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		3	-	-	-	3
4.	Study Level and Semester:	Level 3 or 4 / Semester 6 or 7				
5.	Pre-requisites (if any):	Computer Fundamentals (CIT04)				
6.	Co-requisites (if any):	---				
7.	Program in which the course is offered:	BIT				
8.	Teaching Language:	Englsih				
9.	Instruction location:					
10.	Course facilitator	Mrs.Bridget Shakesy				

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		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

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A Computing Ethics course is not about preaching virtue to encourage immoral and amoral students to adopt a certain established set of beliefs and behavior. It is intended, rather, to increase the ability of concerned engineers, managers and citizens, to first recognize and then responsibly confront moral issues raised by technological activity. The goal is to foster moral autonomy, i.e Professional Practice is concerned with the knowledge, skills, and attitudes that software engineers must possess to practice software engineering in a professional, responsible, and ethical manner. The products produced by software engineers affect the lives and livelihood of the clients and users of those products. Because of their roles in developing software systems, software engineers have significant opportunities to do good or cause harm, to enable others to do good or cause harm, or to influence others to do good or cause harm. Hence, software engineers need to act in an ethical and professional manner.

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Topics/Units of Course Contents

First: Theoretical Aspects

No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours	
1	Social context of computing	1.1 Society in the computer era 1.2 Ethics and computing professional 1.3 Computer and social change 1.4 Autonomy and decision making 1.5 Accessing and digital divide	1	3	
2	Theoretical Underpinnings of Ethics :Methods and tools of analysis of ethical arguments Philosophical Foundations of Ethics	2.1 Ethical Relativism, Absolutism and Pluralism 2.2 The Ethics of Conscience. Ethical Egoism. 2.2.1.The Ethics of Duty. The Ethics of Respect 2.3 The Ethics of Consequences: Utilitarianism 2.3.1 The Ethics of Rights. The Ethics of Justice	2	6	

		2.4 The Ethics of Character. Ethics and Gender			
3	Computer crime	3.1 The increased number of computer crime 3.2 Computer criminal profile and crime victims 3.3 The rising of computer security 3.4 software piracy 3.4.1 Problems of software piracy 3.4.2 taxonomy of software piracy 3.4.3 Trends in software piracy 3.5 Hacking and virus attack 3.5.1 Why hackers are criminal 3.5.2 Virus Attack 3.5.3 Ethical issues in hacking and virus 3.6 Against crime with technology	2	6	
4	Risks and liabilities in software development	4.1 Risk Assessment in Socio technical Systems 4.2 Agile Software Processes, Agile in Practice :ethical issues 4.3 Precautionary principle in engineering and science 4.4 Open Source Software 4.5 Liability and responsibility distribution	1	3	
	MIDTERM(week.no.7)				
5	Professional Ethics and moral reasoning	5.1 Introduction to ethics- Moral issues and law 5.2 professional ethics-overview 5.3 Professional relationship 5.4 Responsibility facing conflicts 5. 5 Professional and ethical responsibilities :Code of ethics	1	3	
6	Social implications of the Internet	Cyber law mechanism and implementation	1	3	
7	Managing Innovation - Intellectual Property	7.1 Introduction to intellectual property	1	3	

		7.2 Copyrights and patents 7.3Why intellectual property has to be protected?			
8	Privacy and civil liberties	8.1 Protecting employees' privacy 8.2 Protecting national security 8.3 Privacy and employees' efficiency 8.4 Legal Perspectives on System Development 8.5 Industrial Relations and Employment Contracts	1	3	
9	Environmental Ethics	9.1 Computer and type of works 9.2 Adapting to today's generation working style 9.3 Danger in the workplace, Health issues ,Personnel threats, terrorism and disaster	1	3	
10	PRESENTATION(week.no.13)				
11	REVISION(week.no.14)				
12	FINAL EXAM				
Total number of weeks and hours			12	36	

III. Tasks and Assignments :

No.	Task/Assignment	CILOs	Week due	Mark
1	Assignment 1	a1,a2,a3	4	10
2	Assignment 2	b1,b3	10	10
3	Assignment 3	b2,c1	12	10
4	Students–led seminars	d1,d2	8, 13	10
5	case discussion/activities	d1,d2	2 ,5,8,11	10

IV.Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Quizzes	3 , 6, 10	10+10+10	5%	--

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2	Research based Assignments	4 & 11,13	10+10+10	15%	
3	Midterm exam	7	25	10%	--
4	Case studies/ activities	2, 5,8,12	5+5+5+5	10%	
4	students-led seminars	8,13	10	10%	
6	Final exam	15	100	50%	--
Total			100		

V. Teaching Strategies

Lectures

Group Discussions

Brain Storming

Assignments

Case study

Role plays and Debates

Activities in the class

Grouping –self evaluations

Students led seminars

Tips

Notes

VI. Learning Resources :

(Author, (Year), Book Title, Edition, Publisher, Country of publishing)

Textbooks-not more than 2

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- Professional Issues in Software Engineering, pp. 199–205. London: Pitman . BRITISH COMPUTER SOCIETY (1999) 'Ethics Committee "Whistle-blowing" Working Party ... alh.sagepub.com
- www.ieee.org/ethics/codes/IEEE_code.pdf
- http://www.acm.org/about/code-of-ethics
- http://www.bcs.org/upload/pdf/conduct.pdf

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VII. Course Policies (To be determined by Faculty Deanship)	
1.	**Class Attendance :**
2.	**Tardy :**
3.	**Exam Attendance/Punctuality:**
4.	**Assignments & Projects:**
5.	**Cheating:**
6.	**Plagiarism:**
7.	**Other policies:**