

## GAU, Faculty of Engineering

<b>Course Unit Title</b>	Engineering Ethics	
<b>Course Unit Code</b>	ENG401	
<b>Type of Course Unit</b>	Compulsory for AIE, IE	
<b>Level of Course Unit</b>	4th year BSc	
<b>National Credits</b>	3	
<b>Number of ECTS Credits Allocated</b>	5	
<b>Theoretical (hour/week)</b>	3	
<b>Practice (hour/week)</b>	0	
<b>Laboratory (hour/week)</b>	0	
<b>Year of Study</b>	4	
<b>Semester when the course unit is delivered</b>	7	
<b>Mode of Delivery</b>	Face to face, E-learning	
<b>Language of Instruction</b>	English	
<b>Prerequisites</b>		
<b>Corequisites</b>		
<b>Recommended Optional Programme Components</b>		
<b>Objectives of the Course:</b>		
<ul style="list-style-type: none"> <li>• Introduce professional ethics, responsibility, and decision-making in engineering practice</li> <li>• Develop student ability to analyze ethical dilemmas using recognized ethical frameworks and codes</li> <li>• Provide practical experience with case studies involving safety, sustainability, privacy, AI, and public welfare</li> <li>• Encourage students to connect professional conduct with legal, social, and global responsibilities</li> </ul>		
<b>Learning Outcomes</b>		
When this course has been completed the student should be able to		Assess.
1	Learn how to explain professional responsibilities and engineering codes of ethics	1,3
2	Learn to analyze ethical dilemmas using structured ethical reasoning	1,3
3	Understand safety, risk, sustainability, privacy, and public welfare in engineering decisions	1,3
4	Discuss ethical issues in artificial intelligence, automation, and data-driven systems	1,3
5	Communicate ethical analysis clearly in written and oral form	1,3
6	Develop a case study report and presentation on an engineering ethics problem	1,3
Assessment Methods: 1. Written Exam, 2. Oral Exam, 3. Assignment, 4. Project/Report, 5. Presentation, 6. Lab Work		
<b>Course's Contribution to Program</b>		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	2
2	Ability to design and conduct experiments as well as to analyze and interpret	2
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	3
4	Ability to apply systems thinking in problem solving	3
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	4
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	2
7	Ability to express their ideas and findings, in written and oral form	4

8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	2
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	4
10	Ability to design systems, processes or products by applying modern methods of work study, ergonomics, production systems and simulation while fulfilling requirements under realistic conditions	2
11	Ability to plan and improve system performance using production planning, quality planning and control, information system design and project planning techniques	2

CL: Contribution Level (1: Low, 2: Medium, 3: High)

### Course Contents

Week	Chapter	Subject	Exams
1	1	Introduction to Engineering Ethics	
2	2	Professionalism and Codes of Ethics	
3	3	Ethical Theories and Moral Reasoning	
4	4	Safety, Risk, and Liability	
5	5	Rights and Responsibilities of Engineers	
6	6	Whistleblowing and Loyalty	
7	7	Conflicts of Interest and Professional Judgment	
8			Midterm
9	8	Environmental and Sustainability Ethics	
10	9	Privacy, Data, and Intellectual Property	
11	10	Global Issues and Cultural Contexts	
12	11	Ethics of Artificial Intelligence and Automation	
13	12	Case Study Analysis	
14	13	Student Case Study Presentations	
15			Final

### Recommended Sources

- Textbook: Engineering Ethics: Concepts and Cases, 6th Edition, Charles E. Harris Jr., Michael S. Pritchard, Michael J. Rabins, Ray W. James, and Elaine Englehardt Supplementary: Ethics in Engineering, 4th Edition, Mike W. Martin and Roland Schinzinger Supplementary: The Oxford Handbook of Ethics of AI, Markus D. Dubber, Frank Pasquale, and Sunit Das

### Assessment

Midterm	30 %
Final exam	40 %
Assignments	20 %
Quizzes	10 %

### ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload (hour)
In-class lecture (including exam weeks)	15	3	45
Midterm exam	1	1.5	1.5
Midterm exam preparation	1	15	15
Final exam	1	1.5	1.5
Final exam preparation	1	20	20
Quiz	2	2	4

Assignment	4	3	12
Project/presentation/report writing	1	16	16
Lab and tutorial	0	0	0
Self-study	15	2	30
Total Workload			145.00
Total Workload / 30 (h)			4.83
ECTS Credit of the Course			5