Uka Tarsadia University

B. Tech.

CSE / CSE (CC) / CE (SE)

Semester VII

Program Elective - V

ETHICS AND STANDARDS IN CLOUD COMPUTING

IT6013

EFFECTIVE FROM July-2024

Syllabus version: 1.00

Subject Code	Subject Title
IT6013	**Ethics and Standards in Cloud Computing**

Teaching Scheme				Examination Scheme				
Hours		Credits		Theory Marks		Practical Marks		Total Marks
Theory	Practical	Theory	Practical	Internal	External	Internal	External	
3	2	3	1	40	60	20	30	150

Objectives of the course:

- To understand and explore the ethical considerations and standards relevant to the deployment, management, and use of cloud computing technologies.
- To understand the ethical implications of data privacy, security, accessibility, and sustainability in the context of cloud services.

Course outcomes:

Upon completion of the course, the student shall be able to,

CO1: Understand the ethical challenges and considerations in cloud computing.
CO2: Analyze the impact of cloud technologies on privacy, security, and accessibility.
CO3: Evaluate ethical dilemmas related to data ownership and governance in the cloud.
CO4: Examine industry standards and best practices for ethical conduct in cloud computing.
CO5: Develop strategies for promoting ethical behavior and compliance with regulations in cloud environments.
CO6: Explore emerging trends and future directions in ethical cloud computing.

Sr. No.	Topics	Hours
	Unit – I	
1	**Ethical Considerations in Cloud Computing:** Data privacy and protection, Security and compliance, Accessibility and inclusivity, Environmental sustainability.	6
	Unit – II	
2	**Legal and Regulatory Frameworks:** Overview of relevant regulations, GDPR, HIPAA, Compliance requirements in different industries, Implications of international data transfers.	9
	Unit – III	

3	**Data Governance and Sovereignty:** Data ownership and control, Jurisdictional issues in the cloud, Transparency and accountability.	8
	Unit – IV	
4	**Industry Standards and Best Practices:** ISO/IEC standards for cloud computing, Security frameworks, CSA Cloud Controls Matrix, Certification programs and compliance audits.	8
	Unit – V	
5	**Case Studies and Ethical Dilemmas:** Real-world examples of ethical challenges in cloud computing, Discussion of ethical decision-making frameworks, Role of stakeholders in resolving ethical dilemmas.	8
	Unit – VI	
6	**Emerging Trends and Future Directions:** Edge computing and distributed cloud architectures, Ethical AI and machine learning in the cloud, Evolving regulatory landscape and its impact.	6

Sr.No.	Ethics and Standards in Cloud Computing(Practicals)	Hours
1	Make brief summary and conductingg a data privacy impact assessment for healthcare records or financial information stored in the cloud for their sensitive data.	4
2	Research and compare the ethical practices of different cloud service providers (e.g., AWS, Google Cloud, Microsoft Azure) parameters are such as data privacy policies, security certifications, environmental sustainability initiatives, and transparency in data handling.	4
3	Find out security vulnerabilities, such as open ports, improper access controls, or misconfigured encryption in AWS, Azure or GCP.	4
4	A case study to identify ethical issues, explore alternative courses of action, and propose ethical solutions in line with industry standards and best practices for any cloud service.	4
5	Identify potential privacy risks, evaluate compliance with relevant regulations (such as GDPR or HIPAA), and propose measures to mitigate risks and enhance data privacy.	4
6	Prepare document for AI or machine learning model deployed on a cloud platform with ensuring ethical use of AI, such as fairness, transparency, accountability, and avoiding bias.	4
7	Prepare audit report for data handling practices against the regulatory requirements. Consider data as detailing findings, non compliance	6

	issues, and recommendations for achieving and maintaining compliance.	

Text books:

1. Thomas Erl , “Cloud Computing: Concepts, Technology & Architecture", Prentice Hall.
2. Tim Mather, Subra Kumaraswamy and Shahed Latif, “Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance", O’reilly.

Reference book:

1. Derrick Rountree and Ileana Castrillo, "The Basics of Cloud Computing".

Course objectives and Course outcomes mapping:

- To understand and explore the ethical considerations and standards relevant to the deployment, management, and use of cloud computing technologies: CO1,CO2,CO3.
- To understand the ethical implications of data privacy, security, accessibility, and sustainability in the context of cloud services: CO4,CO5,CO6.

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Ethical Considerations in Cloud Computing	✓					
2	Legal and Regulatory Frameworks		✓				
3	Data Governance and Sovereignty			✓			
4	Industry Standards and Best Practices				✓		
5	Case Studies and Ethical Dilemmas					✓	
6	Emerging Trends and Future Directions						✓

Programme outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓			
PO2				✓	✓	
PO3	✓	✓	✓			
PO4				✓		
PO5						✓
PO6				✓		✓
PO7	✓	✓	✓			
PO8						✓

PO9					✓	✓
PO10			✓	✓		
PO11		✓			✓	
PO12						✓