Lovely Professional University, Punjab

Course Code	Course Title	Lectures	Tutorials	Practicals	Credits	
CSE121	ORIENTATION TO COMPUTING-II	1	0	0	1	
Course Weightage	ATT: 30 CA: 70	**Exam Category: XX: Mid Term Exam: Not Applicable – End Term Exam: Not Applicable**				

Course Outcomes :Through this course students should be able to

CO1 :: understand the need for data science and big data along with its tools, job roles, and skill set

CO2 :: discuss the use of AI and machine learning in different fields along with its tools, job roles, and skill set

CO3 :: recognize the attacks, malware, tools, job roles, and skill set for cyber security

CO4 :: identify various DevOps and software testing tools, job roles, skill sets, and their applications in IT companies

CO5 :: analyze different types of cloud model implementations and services along with their tools, job roles, and skill set

CO6 :: describe the differentiation and usefulness of various front-end and back-end technologies along with their tools, job roles, and skill set

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	BIG DATA	ANIL MAHESHWARI	MC GRAW HILL
R-2	PRINCIPLES OF SOFT COMPUTING	S.N. SIVANANDAM, S.N. DEEPA	WILEY
R-3	HTML, CSS, AND JAVASCRIPT ALL IN ONE, SAMS TEACH YOURSELF	JULIE C. MELONI, JENNIFER KYRNIN	PEARSON
R-4	CLOUD COMPUTING: FUNDAMENTALS, INDUSTRY APPROACH AND TRENDS	RISHABH SHARMA	WILEY

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	https://www.oracle.com/big-data/	Big Data
RW-2	https://www.ibm.com/in-en/analytics/big-data-analytics	Big Data analytics
RW-3	https://www.ibm.com/topics/data-science	Data Science
RW-4	https://aws.amazon.com/what-is/data-science/	Data science future

RW-5	https://www.cisco.com/c/en_in/products/security/what-is-cybersecurity.html	Cyber security
RW-6	https://www.ibm.com/topics/cloud-computing	Cloud Computing
RW-7	https://www.salesforce.com/in/learning-centre/tech/cloudcomputing/	Salesforce cloud
RW-8	https://cloud.google.com/learn/what-is-cloud-computing	Google cloud def
RW-9	https://aws.amazon.com/devops/what-is-devops/	DevOps
RW-10	https://www.mongodb.com/languages/full-stack-development	Full stack development
RW-11	https://www.ibm.com/topics/machine-learning	Machine learning

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	3

Detailed Plan For Lectures

Week Number	**Lecture Number**	**Broad Topic(Sub Topic)**	**Chapters/Sections of Text/reference books**	**Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs**	**Lecture Description**	**Learning Outcomes**	**Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned**	**Live Examples**
Week 1	Lecture 1	Data Science & Big Data (Data science and its need)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector

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Week 1	Lecture 1	Data Science & Big Data (Applications of data science/Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Data science Lifecycle with use case)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Big data and its 3Vs)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Challenges of Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector

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Week 1	Lecture 1	Data Science & Big Data (Skill needed for Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Tools usage like Apache Hadoop, Tableau, R language, Excel)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Big Data on the Cloud)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Use of Big Data in different areas)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector

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Week 1	Lecture 1	Data Science & Big Data (Job roles and skillset for Data science and Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
Week 2	Lecture 2	Data Science & Big Data (Data science and its need)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Applications of data science/Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Data science Lifecycle with use case)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector

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Week 2	Lecture 2	Data Science & Big Data (Big data and its 3Vs)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Challenges of Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Skill needed for Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Tools usage like Apache Hadoop, Tableau, R language, Excel)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector

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Week 2	Lecture 2	Data Science & Big Data (Big Data on the Cloud)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Use of Big Data in different areas)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
		Data Science & Big Data (Job roles and skillset for Data science and Big data)	R-1	RW-1 RW-2 RW-3 RW-4	L1: Lecture zero to be delivered so that student will understand why they need to study this subject. L2: Discuss about the Introduction, tools, applications, job roles, and skill set of data science and Big data	Students would be able to understand the tools, applications, job roles, and skill set of data science and Big data	Demonstration with PowerPoint presentation	Business, health, tracking customer spending habit, shopping behavior, recommendations, Education sector
Week 3	Lecture 3	Artificial Intelligence & Machine Learning (Introduction to AI)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 3	Lecture 3	Artificial Intelligence & Machine Learning(ML and Deep Learning)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Expert systems)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Fuzzy systems)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning (Augmented Reality)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 3	Lecture 3	Artificial Intelligence & Machine Learning(Use of AI in different fields - NLP, Healthcare, Agriculture, Social media monitoring)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Tools and techniques for implementing AI)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Google Translator)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning (Driverless Car)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 3	Lecture 3	Artificial Intelligence & Machine Learning(ALEXA)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Siri)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning (ChatGPT)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Current trends and opportunities)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 3	Lecture 3	Artificial Intelligence & Machine Learning(Job roles and skillset for AI and ML)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
Week 4	Lecture 4	Artificial Intelligence & Machine Learning (Introduction to AI)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(ML and Deep Learning)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Expert systems)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 4	Lecture 4	Artificial Intelligence & Machine Learning(Fuzzy systems)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning (Augmented Reality)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Use of AI in different fields - NLP, Healthcare, Agriculture, Social media monitoring)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Tools and techniques for implementing AI)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 4	Lecture 4	Artificial Intelligence & Machine Learning(Google Translator)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning (Driverless Car)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(ALEXA)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Siri)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics

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Week 4	Lecture 4	Artificial Intelligence & Machine Learning (ChatGPT)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Current trends and opportunities)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
		Artificial Intelligence & Machine Learning(Job roles and skillset for AI and ML)	R-2	RW-11	Discuss about the Introduction, tools, applications, job roles, and skill set of AI and machine learning	Students would be able to understand the tools, applications, job roles, and skill set of AI and machine learning	Demonstration with PowerPoint presentation	Smart home, agriculture, Speech recognition, Medical diagnosis, Statistical arbitrage, Predictive analytics
Week 5	Lecture 5				Assignment 1			
Week 6	Lecture 6	Introduction to Cyber Security(Introduction to cyber security)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks

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Week 6	Lecture 6	Introduction to Cyber Security(Information security concepts)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(Threats)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(Types of malware)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(Types of attacks)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks

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Week 6	Lecture 6	Introduction to Cyber Security(Use of cyber security in different industries like Healthcare, Manufacturing, E-commerce)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(Tools for cyber security assessment like nmap, wireshark, maltego)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(AI based cyber threat intelligence solutions)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks
		Introduction to Cyber Security(Cyber security opportunities in market and skillset)		RW-5	Discuss about the Introduction, tools, applications, job roles, and skill set of cyber security	Students would be able to understand the tools, applications, job roles, and skill set of cyber security	Demonstration with PowerPoint presentation	Malware, Ransomware Attacks, Man in the Middle Attacks, Distributed Denial of Service (DDoS), Password Attacks, Drive-By Download Attacks

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		SPILL OVER						
Week 7	Lecture 7				Spill Over			
		MID-TERM						
Week 8	Lecture 8				Assignment 2			
Week 9	Lecture 9	DevOps & Software Engineering(Introduction to DevOps)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(DevOps Vs Traditional Software Development Models)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(DevOps Tools : Git, Docker, Selenium, Mavin, Puppet, Ansible, Kubernetes, Nagios)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(Fundamentals of testing)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(Objectives of Testing)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(Types of Testing)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling

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Week 9	Lecture 9	DevOps & Software Engineering(Levels of testing)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(Applications of software testing in IT companies)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
		DevOps & Software Engineering(Career opportunities in the field of DevOps and software testing with skillset)		RW-9	Discuss about the Introduction, tools, applications, job roles, and skill set of DevOps and Software Engineering	Students would be able to understand the tools, applications, job roles, and skill set of DevOps and Software Engineering	Demonstration with PowerPoint presentation	Microservices, continuous delivery, Network cycling
Week 10	Lecture 10				Assignment 3			
Week 11	Lecture 11	Introduction to Cloud Computing(Introduction to cloud computing)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint

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Week 11	Lecture 11	Introduction to Cloud Computing(Uses of cloud computing in applications services)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint
		Introduction to Cloud Computing(Platform deployments)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint

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Week 11	Lecture 11	Introduction to Cloud Computing(Types of cloud model implementations)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint
		Introduction to Cloud Computing(Types of cloud services)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint

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Week 11	Lecture 11	Introduction to Cloud Computing(Data analytics)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint
		Introduction to Cloud Computing(Virtualization)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint

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Week 11	Lecture 11	Introduction to Cloud Computing(Tools and techniques for implementing)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint
		Introduction to Cloud Computing(Job roles and skillset for cloud computing)	R-4	RW-6 RW-7 RW-8	Discuss about the Introduction, tools, applications, job roles, and skill set of Cloud computing	Students would be able to understand the tools, applications, job roles, and skill set of Cloud computing	Demonstration with PowerPoint presentation	Software-as-a-Service (Saas): Salesforce Infrastructure-as-a-Service (Saas): DigitalOcean Platform-as-a-Service (Saas): AWS File Sharing + Data Storage: Dropbox Big Data Analysis: Civis Analytics Data Governance: Carbonite Cybersecurity: Forcepoint
Week 12	Lecture 12	Introduction to Full Stack Web Development and UI/UX(Introduction to Web Development)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development

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Week 12	Lecture 12	Introduction to Full Stack Web Development and UI/UX(User Interface Design)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(frontend)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(backend)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(databases)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(CRUD applications)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(Languages such as HTML, CSS, PHP, Java Scripts, and frameworks)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(Tools such as VS Code will be used as an editor for website development)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(Single page applications)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development

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Week 12	Lecture 12	Introduction to Full Stack Web Development and UI/UX(responsive websites)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(mobile first development)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
		Introduction to Full Stack Web Development and UI/UX(Job roles and skillset for full stack and UI/UX)	R-3	RW-10	Discuss about the Introduction, tools, applications, job roles, and skill set of Full stack web development	Students would be able to understand the tools, applications, job roles, and skill set of Full stack web development	Demonstration with PowerPoint presentation	website development
Week 13	Lecture 13				Assignment 4			
		SPILL OVER						
Week 14	Lecture 14				Spill Over			
Week 15	Lecture 15				Spill Over			

Scheme for CA:

CA Category of this Course Code is:C010203 (Total 4 tasks, 1 compulsory and out of remaining 2 best out of 3 to be considered)

Component	Iscompulsory	Weightage (%)	Mapped CO(s)
Certification - MOOCs	NO	30	CO1, CO2
Assignment	NO	30	CO3, CO4
Event - Participation	NO	30	CO5
Portfolio	Yes	40	CO6

Details of Academic Task(s)

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Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Certification - MOOCs	To assess the student based on their profile creation and performance in the MOOC for the CSE111 course.	Students need to produce the certificate earned for completing the MOOC that was assigned in the CSE111 course. Students will be evaluated on the basis of their performance. There will be equal weightage given to profile creation and MOOCs. Unit 1 and Unit 2 syllabuses can be referred to for profile creation.	Individual	Online	100	4 / 6
Assignment	To make students aware of the availability of online learning platforms and to prepare them for placements.	Students can sign up for various learning platforms such as saylor.org, LinkedIn Learning (Lynda), and others. They have to show their performance on these different platforms with a timestamp. Students will be evaluated based on their performance on different technical platforms. There will be equal weightage given to profile creation and Short term course. Unit 3 and Unit 4 syllabuses can be referred to for profile creation.	Individual	Online	100	8 / 9
Event - Participation	To provide a platform where students are encouraged to contribute their expertise and unique ideas.	Students will be evaluated on the basis of their participation in multiple events, their performance, and their effectiveness in the Tech fest. There will be 70% weightage given to Tech fest participation and 30% for the profile creation. Unit 5 syllabus can be referred to for profile creation.	Individual	Online	100	10 / 11
Portfolio	To prepare and assess for the creation of a dream CV, a video CV, and a future three-year road map	Students will be evaluated on the basis of their video presentations of their dream CVs. The video will be uploaded to YouTube in unlisted mode by the student. A student will also create a Gantt chart of his or her career path plan. There will be 70% weightage given to CV generation and three year career roadmap and 30% for the profile creation. Unit 6 syllabus can be referred to for profile creation.	Individual	Online	100	12 / 13

MOOCs/ Certification etc. mapped with the Academic Task(s)

Academic Task	Name Of Certification/Online Course/Test/Competition mapped	Type	Offered By Organisation
Assignment	CERTIFICATION PROGRAMME FOR SAFEGUARDING DIGITAL FOOTPRINTS	MOOCs	QUICK HEAL ACADEMY

Where MOOCs/ Certification etc. are mapped with Academic Tasks:
1. Students have choice to appear for Academic Task or MOOCs etc.
2. The student may appear for both, In this case best obtained marks will be considered.