Shri. Balasaheb Mane Shikshan Prasarak Mandal's
ASHOKRAO MANE GROUP OF INSTITUTIONS
FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
NH – 4, Wathar Tarf Vadgaon, Tal: - Hatkanangale, Dist: - Kolhapur - 416112.
Phone: (0230) 2407740, 2407750, 2407760 Fax: (0230) 2407750

Fourth Year B. Tech CSE

Subject: Software Engineering **Subject Code: BTCOC701**

Course Outcomes (COs):-

	Upon completion of this course Student should be able to
CO1	Understand knowledge of basic Software engineering methods and practices, and their appropriate applications
CO2	Apply the agile methodologies to development of software
CO3	Apply the varies software system modeling techniques at the time of development of software
CO4	Apply design and implementation methods to each respective model
CO5	Apply the testing strategies to developed software/model for check it is working or some issues are occurred

CO-PO Mapping:-

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												2		
2		3													2
3		3													2
4		3													2
5									3						2

CO-PO Mapping Justification:-

CO No	PO/PSO	CL	JUSTIFICATION
1	PO 1	3	Strongly mapped as Provide knowledge of basic Software engineering methods and practices, and their appropriate applications.
	PSO 1	2	Medium mapped as students will have the knowledge software engineering and its applications, and process methods
2	PO2	3	Strongly mapped as students will apply various Agile technologies at the time of development of Software OR any model with quickly and less time duration
	PSO3	2	Slightly mapped as students apply the agile methodology as well as traditional software engineering methods for development of software.
3	PO2	3	Strongly mapped as students will apply system modeling methods to describe all details with each model
	PSO3	2	Moderately mapped as students develop the ability to analyze, design the software
4	PO2	3	Strongly mapped as students will apply various methods for quality control and how to ensure good quality software
	PSO3	2	Moderately mapped as students build the role of project management in planning, scheduling, risk management, different software architectural styles, implementation issues
5	PO9	3	Strongly mapped as students will apply the software testing approaches such as unit testing and integration testing and understanding of software evolution and related issues such as version management
	PSO3	2	Moderately mapped as students search the some ethical and professional issues that are important for software engineers and development of significant teamwork and project-based experience

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Subject: Cloud Computing **Subject Code: BTCOC702**

Course Outcomes (COs):-

CO	DESCRIPTION (Student should be able to...)
1	Understand main concept, strengths and limitations of cloud computing
2	Acquire knowledge and implement in real time environment such as AWS, Microsoft Azure.
3	Understand different services introduced by cloud.
4	Explain core issues of Cloud computing such as disaster recovery and optimization
5	Be able to use and install current cloud technologies

CO-PO Mapping:-

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1					3								3		
2			3											3	
3						2									
4					2										
5												3			3
C203													3	3	3

CO-PO Mapping Justification:-

CO	Justification of mapping		
	1: Slight (Low)	2: Moderate (Medium)	3: Substantial (High)
1			PO-5 Students are apply appropriate technique & tools on key issues in Cloud Computing
2			PO-3 Students are performing practical's with higher accuracy on AWS and Azure
3		PO-5 Students are apply appropriate technique & tools on Cloud Computing Platforms	PO-3 Students are performing practical's on Moodle Cloud
4		PO-5 Students are apply appropriate technique & tools on Cloud computing and services	PO-3 Students are performing practical's on Virtual Box , VMWare
5			PO-3 Students are performing practical's on Aneka

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Subject: Big Data Analytics **Subject Code: BTCOE703**

Course Outcomes (COs):-

Upon completion of this course, students will be able to	
CO1	Understand fundamentals of Big Data analytics.
CO2	Understand Hadoop framework and Hadoop Distributed File system.
CO3	Understand Big Data Streaming Platforms for Fast Data like spark, flink,samza & storm.
CO4	Apply machine Learning algorithms for real world big data. Web contents and Social Networks to provide analytics with relevant visualization tools.
CO5	Illustrate the concepts of NoSQL using MongoDB.

CO-PO Mapping:-

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2			3								1			1
2	2		1	3								1			1
3	2		1									1			1
4	2	2	2	1								1			1
5	2		2	1								1			1
Avg	2	2	1.5	2								1			1

CO-PO Mapping Justification:-

CO No	PO/PSO	CL	JUSTIFICATION
1	PO 1	2	Moderately having the Knowledge of the fundamental concepts of Big Data management and analytics helps in solving complex engineering problems
	PO 4	3	Highly having the knowledge of Big Data management and analytics concepts knowledge can be used to provide valid conclusions
	PO12	1	Slightly the student will become aware of the need for lifelong learning and the continued upgrading of technical knowledge
	PSO 3	1	Slightly the student will study of fundamental concepts of Big Data management and analytics acquire skills to design, analyse and implement software products.
2	PO1	2	Moderately having Knowledge of Hadoop framework and Hadoop Distributed File system involves solving complex engineering problems
	PO3	1	Slightly the student using the knowledge of Hadoop framework and Hadoop Distributed File system, we can design and develop solutions for complex engineering problems
	PO4	3	Highly having the knowledge of Hadoop framework and Hadoop Distributed File system concepts can be used to synthesis of the information to provide valid conclusions
	PO12	1	Slightly the student will become aware of the need for lifelong learning and the continued upgrading of technical knowledge.
	PSO3	1	Slightly the student will study of fundamental concepts of Hadoop framework and Hadoop Distributed File system acquire skills to design, analyse and implement software products
3	PO1	2	Moderately having Knowledge of Big Data Streaming Platforms for Fast Data like spark, flink, samza & storm involves solving complex engineering problems

	PO3	1	Slightly the student using the knowledge of Big Data Streaming Platforms for Fast Data like spark, flink, samza & storm we can design and develop solutions for complex engineering problems.
	PO12	1	Slightly the student will become aware of the need for lifelong learning and the continued upgrading of technical knowledge.
	PSO 3	1	Slightly the student will study of fundamental concepts of Big Data Streaming Platforms for Fast Data like spark, flink, samza & storm acquire skills to design, analyse and implement software products.
4	PO1	2	Moderately having Knowledge of machine Learning algorithms for real world big data., web contents and Social Networks involves solving complex engineering problems
	PO2	2	Moderately having Knowledge of machine Learning algorithms for real world big data., web contents and Social Networks knowledge can be used to conduct experiments in real life problems to provide valid conclusions
	PO3	2	Moderately the student using the knowledge of machine Learning algorithms for real world big data., web contents and Social Networks, we can design and develop solutions for complex engineering problems
	PO4	1	Slightly having the knowledge of machine Learning algorithms for real world big data., web contents and Social Networks concepts can be used to design and conduct experiments to provide valid conclusions
	PO12	1	Slightly the student will become aware of the need for lifelong learning and the continued upgrading of technical knowledge.
	PSO3	1	Slightly the student will study of fundamental concepts of machine Learning algorithms for real world big data. Web contents and Social Networks acquire skills to design, analyse and develop algorithms and implement them using high-level programming languages.
5	PO1	2	Moderately having Knowledge of NoSQL using MongoDB involves solving complex engineering problems
	PO3	2	Moderately the student using the knowledge of NoSQL using MongoDB we can design and develop solutions for complex engineering problems
	PO4	1	Slightly having the knowledge of NoSQL using MongoDB concepts can be used to design and conduct experiments to provide valid conclusions
	PO12	1	Slightly the student will become aware of the need for lifelong learning and the continued upgrading of technical knowledge.
	PSO3	1	Slightly the student will study of fundamental concepts of NoSQL using MongoDB and Cassandra File system acquire skills to design, analyse and develop algorithms and implement them using high-level programming languages.

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Subject: Block chain Technology **Subject Code: BTCOE704(C)**

Course Outcomes (COs):-

CO	DESCRIPTION (Student should be able to...)
1	Understand Overview of Block chain, Public Ledgers, Smart Contracts, Block in a Block chain, Basic Crypto Primitives.
2	Understand Creation of coins, Working with Consensus in Bit coin, Attacks on POW and the monopoly problem.
3	Understand Permissioned model and use cases, Design issues for Permissioned block chains, Overview of Consensus models for permissioned block chain-Distributed consensus in closed environment.
4	Understand Block chain Application Development, Enterprise application of Block chain.
5	Understand Block chain Application Development. Hyper ledger Fabric, smart contract using Ethereum.

CO-PO Mapping:-

CO	**PO**												**PSO**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	3														
2									2						
3					3								2	3	
4						3									
5			3							2					
C301	3		3		3	3			2	2			2	3	

CO-PO Mapping Justification:-

CO	Justification of mapping		
	1: Slight (Low)	2: Moderate (Medium)	3: Substantial (High)
1			PO-1 Students are getting knowledge at high level of engineering problems.
2		PO-2 Students effectively use different models of Bit coin individually.	
3		PSO-1 Students demonstrate Permissioned model and use cases.	PO-5 Students effectively use Consensus models for permissioned block chain. PSO-2 Students demonstrate BFT over Asynchronous systems.
4			PO-6 Students effectively Block chain Application Development, Enterprise application of Block chain
5		PO-10 Students effectively use Query processing concepts in communication with society engineering community.	PO-3 Students effectively use Block chain Application Development.

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Subject: Design Thinking **Subject Code: BTCOE705(C)**

Course Outcomes (COs):-

CO	Upon completion of this course Student should be able to
CO1	Understand Design Thinking Basics also design thinking process, models, and its relevance in innovation.
CO2	Apply Human-Centered Design (HCD) Implement HCD phases: Empathize, Define, Ideate, Prototype, Test, and Iterate.
CO3	Analyze and Define Problems and Conduct root cause analysis and resolve conflicts.
CO4	Remember the Validate Solutions also Validate assumptions made during the design process.
CO5	Apply the design innovation management.

CO-PO Mapping:-

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1												3	2		
2		3													2
3		3													2
4		3													2
5							3								2

CO-PO Mapping Justification:-

CO No	PO/PSO	CL	JUSTIFICATION
1	PO 12	3	Strongly mapped as Provide knowledge of basic Design thinking for before Software development and their appropriate applications.
	PSO 1	2	Medium mapped as students will have the knowledge of design thinking process which is consider the pre design of software applications.
2	PO2	3	Strongly mapped as students will apply various Empathize techniques for design application
	PSO3	2	Slightly mapped as students apply the empathize different methodology as well as traditional thinking methods..
3	PO2	3	Strongly mapped as students will create own ideas regarding application
	PSO3	2	Moderately mapped as students understand the way of thinking related to developing application
4	PO2	3	Strongly mapped as students will apply various prototyping and Validation methods to create more efficient software or application
	PSO3	2	Moderately mapped as students build the own rules to cover the target of development
5	PO7	3	Strongly mapped as students realize the innovating ideas is more effective in modern environment
	PSO3	2	Moderately mapped as students search the some ethical and professional new ideas and apply in different process models