Pimpri Chinchwad Education Trust's

PIMPRI CHINCHWAD COLLEGE OF ENGINEERING

SECTOR NO. 26, PRADHIKARAN, NIGDI, PUNE 411044

An Autonomous Institute Approved by AICTE and Affiliated to SPPU, Pune

DEPARTMENT OF INFORMATION TECHNOLOGY

Curriculum Structure and Syllabus
of

Honors in Blockchain Technology
(Regulations 2020)

Effective from Academic Year 2024-25
(Updated with Minor Changes)

Institute Vision

To be one of the top 100 Engineering Institutes of India in coming five years by offering exemplarily Ethical, Sustainable and Value Added Quality Education through a matching ecosystem for building successful careers.

Institute Mission

1. Serving the needs of the society at large through establishment of a state-of-art Engineering Institute
2. Imparting right Attitude, Skills, Knowledge for self-sustenance through Quality Education
3. Creating globally competent and Sensible engineers, researchers and entrepreneurs with an ability to think and act independently in demanding situations

EOMS Policy

"We at PCCOE are committed to offer exemplarily Ethical, Sustainable and Value Added Quality Education to satisfy the applicable requirements, needs and expectations of the students and stakeholders.

We shall strive for technical development of students by creating globally competent and sensible engineers, researchers and entrepreneurs through Quality Education.

We are committed for Institutes' social responsibilities and managing Intellectual property.

We shall achieve this by establishing and strengthening state-of-the-art Engineering Institute through continual improvement in effective implementation of Educational Organizations Management Systems (EOMS)."

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering

Course Approval Summary

A) Board of Study-Information Technology

Sr. No.	Name of the Course	Course Code	Page Number	Signature and Stamp of BoS
1	Blockchain Foundations and Use cases	**HIT5981**	4	
2	Blockchain Laboratory	**HIT5982**	6	
3	Smart Contracts & Crypto currencies	**HIT6981**	8	
4	Smart Contracts & Crypto currency Laboratory	**HIT6982**	10	
5	Decentralize & Blockchain Technologies	**HIT7981/ HIT8981**	12	
6	Seminar	**HIT7982/ HIT8982**	14	
7	Project	**HIT8983/ HIT7983**	16	

Approved by Academic Council:

Chairman, Academic Council
Pimpri Chinchwad College of Engineering

INDEX

Sr. No.	Content	Pg. No.
1	Structure of Honor in Blockchain Technology	1
2	Curriculum Syllabus (Semester-V)	4-6
3	Curriculum Syllabus (Semester-VI)	8-10
4	Curriculum Syllabus (Semester-VII/ VIII)	12-18
5	Vision and Mission of Information Technology Department	19

LIST OF ABBREVIATIONS IN CURRICULUM STRUCTURE

Sr. No.	Abbreviation	Expansion
1.	L	Lecture
2.	P	Practical
3.	T	Tutorial
4.	H	Hours
5.	Cr	Credits
6.	FA	Formative Assessment
7.	SA	Summative Assessment
8.	TW	Term Work
9.	OR	Oral
10.	PR	Practical
11.	PROJ	Project

Curriculum Structure

Honors in Blockchain Technology

Curriculum Structure- Honors in Blockchain Technology

Semester – V		Teaching Scheme					Evaluation Scheme						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT5981	Blockchain Foundations and Use cases	4	-	-	4	4	20	20	60	-	-	-	100
HIT5982	Blockchain Laboratory	-	-	2	2	1	-	-	-	50	-	-	50
Total		**4**	**-**	**2**	**6**	**5**	**20**	**20**	**60**	**50**	**-**	**-**	**150**
Semester – VI		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT6981	Smart Contracts & Crypto currencies	4	-	-	4	4	20	20	60	-	-	-	100
HIT6982	Smart Contracts & Crypto currency Laboratory	-	-	2	2	1	-	-	-	25	-	25	50
Total		**4**	**-**	**2**	**6**	**5**	**20**	**20**	**60**	**25**	**-**	**25**	**150**
Scheme A													
Semester – VII		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT7981	Decentralize & Blockchain Technologies	3	-	-	3	3	20	20	60	-	-	-	100
HIT7982	Seminar	-	2	-	2	2	-	-	-		-	50	50
Total		**3**	**2**	**-**	**5**	**5**	**20**	**20**	**60**		**-**	**50**	**150**
Semester – VIII		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT8983	Project	-	-	10	10	5	-	-	-	50	-	100	150
Total		**-**	**-**	**10**	**10**	**5**	**-**	**-**	**-**	**50**	**-**	**100**	**150**
Scheme B													
Semester – VII		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT7983	Project	-	-	10	10	5	-	-	-	50	-	100	150
Total		**-**	**-**	**10**	**10**	**5**	**-**	**-**	**-**	**50**	**-**	**100**	**150**
Semester - VIII		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT8981	Decentralize & Blockchain Technologies	3	-	-	3	3	20	20	60	-	-	-	100
HIT8982	Seminar	-	2	-	2	2	-	-	-	-	-	50	50
Total		**3**	**2**	**-**	**5**	**5**	**20**	**20**	**60**	**-**	**-**	**50**	**150**
Scheme C													
Semester - VII		**Teaching Scheme**					**Evaluation Scheme**						

Course Code	Course Name	L	T	P	H	Cr	FA1	FA2	SA	TW	PR	OR	Total
HIT7981	Decentralize & Blockchain Technologies	3	-	-	3	3	20	20	60	-	-	-	100
HIT7982	Seminar	-	2	-	2	2	-	-	-		-	50	50
Total		**3**	**2**	**-**	**5**	**5**	**20**	**20**	**60**		**-**	**50**	**150**
Semester – VIII		**Teaching Scheme**					**Evaluation Scheme**						
Course Code	**Course Name**	**L**	**T**	**P**	**H**	**Cr**	**FA1**	**FA2**	**SA**	**TW**	**PR**	**OR**	**Total**
HIT8983	Project	-	-	10	10	5	-	-	-	50	-	100	150
Total		**-**	**-**	**10**	**10**	**5**	**-**	**-**	**-**	**50**	**-**	**100**	**150**
Total Credit for Semester V+VI+VII+VIII = 20													

***To be offered as Honors for Major Disciplines as–**

1. Electronics and Telecommunication Engineering
2. Computer Engineering
3. Information Technology

For any other Major Disciplines which is not mentioned above, it may be offered as Minor Degree.

Abbreviations: Course Abbreviation; **L-** Lecture; **P-** Practical; **H-** Hours; **CR-** Credits; **FA-** Formative Assessment; SA –Summative Assessment; **TW** – Term Work; **OR** – Oral Exam; **PR-** Practical Exam.

Course Syllabus

Semester-V

Program:	B. Tech. (IT/Comp/EnTC-Honors)	Semester :	V
Course : **Blockchain Foundations and Use cases**		Code : **HIT5981**	

Teaching Scheme				Evaluation Scheme			
Lecture	**Practical**	**Tutorial**	**Credit**	**FA1**	**FA2**	**SA**	**Total**
4	-	-	4	20	20	60	100

Course Objectives:

After completion of the course, students will have adequate background, conceptual clarity and knowledge related to:

1. Technology behind block chain
2. Emerging trends in block chain
3. Real-world applications of block chain.

Course Outcomes:

After learning the course, the students should be able to:

1. Identify the importance of Blockchain technology
2. Interpret the fundamentals and basic concepts in Blockchain
3. Summarize the requirements of the basic design of blockchain.
4. Compare the working of different blockchain platforms
5. Summarize the different technologies and latest trends in Blockchain
6. Analyze the importance of blockchain in finding the solution to the real-world problems.

Detailed Syllabus:

Unit	Description	Duration [Hrs]
1	**Introduction to Blockchain Technology:** Basic ideas behind block chain, how it is changing the landscape of digitalization, introduction to cryptographic concepts, Hashing, public key cryptosystems, Blockchain 1.0,2.0,3.0, private vs public block chain and use cases, Hash Puzzles	10
2	**Blockchain Fundamentals:** Basic architecture of Blockchain, different terminologies associated, Characteristics of Block chain, Types of networks, Consensus mechanisms, Wallets, UTXO, Introducing Smart contract concept in Blockchain.	10
3	**Components of Blockchain:** Core components of Blockchain, Types of Block chains; Blockchain Protocol, Permission & Permission less Block chains, Lifecycle of Blockchain transaction	9
4	**Digital Ledger:** Short History of Money and Trust,Basics of cryptocurrency, Bitcoin Mechanics-Digital signatures, Introduction to Ethereum, Introduction to Hyperledger, Hyperledger Fabric and its architecture,	10
5	**Emerging Trends in Blockchain:** Cloud-based block chain, Multi chain, Geth , Stellar , Ripple, R3 Corda, Blockchain API, Polkadot, Blockchain Sandboxes	11
6	**Block Chain Use Cases:** Supply Chain Management, Finance, Health Care, Internet of Things (IoT), Remittance, Land Records, Voting and election, Loyalty Programs, Go Green (Renewable Energy)	10
	Total	**60**

Text Books:

1. Artemis Caro, “Blockchain: The Beginners Guide to Understanding the Technology Behind Bitcoin & Crypto currency”.
2. Scott Marks, “Blockchain for Beginners: Guide to Understanding the Foundation and Basics of the Revolutionary Blockchain Technology”, Create Space Independent Publishing Platform

Reference Books:

1. Mark Watney, “Blockchain for Beginners”.
2. Alwyn Bishop, “Blockchain Technology Explained”.

e-sources:

1. NPTEL Course **“Introduction to Blockchain Technology & Applications”**
   https://nptel.ac.in/courses/106/104/106104220/
2. NPTEL Course on **“Blockchain Architecture &UseCases”**
   https://nptel.ac.in/courses/106/105/106105184/

Program:	B. Tech. (IT/Comp/EnTC-Honors)			Semester :	V		
Course : **Blockchain Laboratory**				Code : **HIT5982**			
Teaching Scheme				**Evaluation Scheme**			
Lecture	**Practical**	**Tutorial**	**Credit**	**TW**	**OR**	**PR**	**Total**
-	2	-	1	50	-	-	50

Course Objectives:

After completion of the course, students will have adequate background, conceptual clarity and knowledge related to:

1. The working of blockchain technology
2. The real-world applications of blockchain.

Course Outcomes:

After learning the course, the students should be able to:

1. Apply Cryptography and Blockchain concepts
2. Describe the underlying technology of transactions, blocks, proof-of-work, and consensus building
3. Analyze and compare between Direct Acyclic Graph and Blockchain Technology
4. Implement smart contract in Remix IDE(or in any Integrated Environment)
5. Analyze Blockchain models by considering various use cases.
6. Interpret the process of solving puzzles for mining

Suggested list of assignments

Sr. No.	List of Assignments (Any Five)
1.	Demonstrate Naïve Blockchain construction
2.	Case study on Direct Acyclic Graph
3.	Implement simple Smart Contracts in Remix IDE
4.	Demonstrate Mining puzzles creation.
5.	Setup the Ethereum development environment. Implement a dApp using Ethereum Blockchain platform.
6.	Case study on any one usecase of Blockchain. (Rigorous survey of usecase is expected)

Course Syllabus

Semester-VI

Program:	B. Tech. (IT/Comp/EnTC-Honors)			Semester :	VI		
Course :Smart Contracts & Crypto currencies				Code : HIT6981			
Teaching Scheme				Evaluation Scheme			
Lecture	**Practical**	**Tutorial**	**Credit**	**FA1**	**FA2**	**SA**	**Total**
4	-	-	4	20	20	60	100

Course Objectives:

After completion of the course, students will have adequate background, conceptual clarity and knowledge related to:

1. Crypto currency, Bitcoin and Smart contracts
2. Study public blockchain platforms such as Ethereum.

Course Outcomes:

After learning the course, the students should be able to:

1. Interpret the concept of smart contracts in blockchain.
2. Illustrate the Ethereum public blockchain platform
3. Interpret the need and working of crypto currency
4. Illustrate the cryptocurrency regulations
5. Describe the underlying technology of transactions, blocks, Bitcoins
6. Analyze the different cognitive applications on different platforms

Detailed Syllabus:

Unit	Description	Duration [Hrs]
1	**Smart Contracts:** Introduction to Smart Contracts, Structure of Smart Contract, Smart Contract Interaction, Smart Contracts Examples. Tokens: ERC	10
2	**Ethereum Blockchain Components:** Introduction to Ethereum Development Tools, Ethereum Clients, Ethereum Languages, Ethereum Wallets, Ethereum Accounts, Ethereum Key pairs, Introduction to Web 3.0, NFTs, Dapps and DAOs, Web 3.0 Infrastructure and Platforms	11
3	**Hyperledger Blockchain:** Architecture of HLF, Transaction flow, car ownership tracking usecase, Fabric installation and application development, Chaincode development.	10
4	**Crypto currency** :History Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Side chain, Name coin, future of Blockchain for crypto currencies, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy.	10
5	**Bitcoins:** Introduction to Bitcoins, Bitcoin : Digital Signature, Digital Keys, Private Keys, Public Keys, Bitcoins Addresses, Bitcoins Transactions, Bitcoins Network, Bitcoins Wallets, Bitcoins Payments, Bitcoins Clients and APIs, Bitcoins Limitation	10
6	**Case studies of Block Chain in Cognitive applications:** IBM Blockchain, Blockchain in Health care Innovation, AI Marketplaces, Investment Management Platforms, Future of AI and Blockchain. Internet of Things, Medical Record Management System, Domain Name Service.	9
	Total	**60**

Text Books:

1. Arvind Narayanan, Joseph Bonneau, EdwardFelten, Andrew Miller and Steven Goldfeder, "Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction", Princeton University

Press.Antonopoulos, "Mastering Bitcoin: Unlocking DigitalCryptocurrencies"

Text Books:

3. Arvind Narayanan, Joseph Bonneau, EdwardFelten, Andrew Miller and Steven Goldfeder, "Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction", Princeton University Press.
4. Antonopoulos, "Mastering Bitcoin: Unlocking DigitalCryptocurrencies"

Reference Books:

1. Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic CashSystem".
2. Dr. Gavin Wood, "ETHEREUM: A Secure Decentralized Transaction Ledger", Yellow paper2014.
3. Nicola Atzei, Massimo Bartoletti, and TizianaCimoli, "A survey of attacks on Ethereum smart contracts"

e-sources:

1. NPTEL Course **"Introduction to Block Chain Technology& Applications"**

   https://nptel.ac.in/courses/106/104/106104220/
2. NPTEL Course on **"Blockchain Architecture &UseCases"**

   https://nptel.ac.in/courses/106/105/106105184/

Program:	**B. Tech. (IT/Comp/EnTC-Honors)**					Semester: **VI**	
Course: **Smart Contracts & Crypto currency Laboratory**						Code: **HIT6982**	
Teaching Scheme				**Evaluation Scheme**			
Lecture	**Practical**	**Credit**	**Hours**	**TW**	**OR**	**PR**	**Total**
-	2	1	2	25	25	-	50

Course Objectives:

1. To design bitcoin application
2. To implement the real-world applications of blockchain.

Course Outcomes:

After learning the course, the students will be able to:

1. Demonstrate Bitcoin core client to see the transactions..
2. Experiment on the Ethereum development environment.
3. Implement smart contracts in Ethereum Blockchain
4. Test the smart contract to find the vulnerabilities present in the code
5. Summarize the importance of blockchain technology in different cognitive applications

Suggested list of assignments

Sr. No.	Description
1.	Install and Get Started with the Bitcoin core client. Write a program to get Bitcoin and create transactions.
2.	Setup the Hyperledger Fabric development environment.
3.	Implement a decentralized application for any use case on Hyperledger Fabric.
4.	Create smart contract (Chaincode) and test the contract (against smart contract vulnerabilities)
5.	Case studies on Cognitive computing

Course Syllabus

Semester-VII/ VIII

Program:	B. Tech. (IT/Comp/EnTC-Honors)			Semester :	VII/ VIII		
Course :Decentralize & Blockchain Technologies				Code : HIT7981/ HIT8981			
Teaching Scheme				Evaluation Scheme			
Lecture	**Practical**	**Tutorial**	**Credit**	**FA1**	**FA2**	**SA**	**Total**
3	-	-	3	20	20	60	100

Course Objectives:

After completion of the course, students will have adequate background, conceptual clarity and knowledge related to:

1. Decentralized systems and applications
2. Different consensus algorithms used in blockchain
3. Blockchain attacks and security.

Course Outcomes:

After learning the course, the students will be able to:

1. Categorize and identify decentralized systems
2. Illustrate the importance of decentralized applications
3. Compare the working of different consensus algorithms in Blockchain
4. Summarize the working of Hyperledger Fabric private blockchain platform
5. Identify Blockchain vulnerabilities, attacks and defense techniques
6. Identify relative application where blockchain technology can be effectively used and implemented.

Detailed Syllabus:

Unit	Description	Duration [Hrs]
1	**Decentralized Systems:** Introduction to Decentralized System, Disintermediation, Contest Driven, Framework and Ecosystem for Decentralized System.	8
2	**Decentralized Applications:** Introduction to Decentralized Applications, Blockchain Mining, Whisper, Swarm, Forks.	8
3	**Consensus and Fault Tolerances:**Consensus Approach, Consensus Elements, Consensus Algorithms, Proof of Work, Byzantine General problem, Proof of Stake, Proof of Elapsed Time, Proof of Activity, Proof of Burn.	8
4	**Hyperledgers:** Hyperledger Fabric, Saw tooth, Indy, Hyperledger tools Caliper and Hyperledger library Ursa, Blockchain as-a-service deployment model of Hyperledger Cello.	8
5	**Blockchain Technologies Security, Attacks and defence:** Pseudo-anonymity vs. anonymity, Zcashand Zk-SNARKS for anonymity preservation, Attacks on Blockchains: Sybil attacks, selfish mining and 51% attacks; Advent of Algorand ,and Sharding based consensus algorithms to prevent the attacks	8
6	**BlockChain Technology And Applications:**Selection of Blockchain technology, Determining the business needs, Defining the goal and Choosing a Solution, Internet of Things, Medical Record Management System, Domain Name Service and future of Blockchain	5
	Total	**45**

Text Books:

1. J.H. Huiwitz, M.Kaufman, A.Bowles, " Cognitive Computing & Big Data Analystics",Wiley Publication

Reference Books:

1. A. Reyana, C.Martin, J.Chen, E.Soler, M.Diaz, "On blockchain and its integration with IoT challenges & Opportunities" Paper in Future Generation Computer Systems, Vol. 88, Nov. 2018, pp.173-190.
2. H.F.Atlam, Muhammad A.A.,A.G. Alzaharani, G. Wills, "A review of Blockchain in Internet of Things and AI",paper in Big Data and Cognitive Computing, Vol.4, Issue 28, Oct.2020

e-sources:

1. NPTEL Course https://nptel.ac.in/courses/106/105/106105184/

Program:	B. Tech. (IT/Comp/EnTC-Honors)			Semester :	VII/ VIII		
Course : **Seminar**				Code : **HIT7982/ HIT8982**			
Teaching Scheme				**Evaluation Scheme**			
Lecture	**Practical**	**Tutorial**	**Credit**	**TW**	**OR**	**PR**	**Total**
-	-	2	2	-	50	-	50

Course Objectives:

Seminar should make the student attain skills like-

1. To gather the literature of specific areas in a focused manner.
2. To summarize the literature to find state-of-the-art in the proposed area.
3. To identify scope for future work.
4. To present the case for the intended work to be done as a project.
5. To report literature review and proposed work in scientific way

Course Outcomes:

On completion of the course, students will be able to–

1. Interpret and summarize technical literature.
2. Demonstrate the techniques used in the paper.
3. Distinguish the various techniques required to accomplish the task.
4. Identify intended future work based on the technical review.
5. Prepare and present the content through various presentation tools and techniques in an effective manner.
6. Demonstrate interpersonal skills

Seminar is a course requirement where in under the guidance of a faculty member a student is expected to do an in depth study on the topic relevant to latest trends in the field of concerned Honors degree selected by him / her and approved by the authority; by doing literature survey, understanding different aspects of the problem and arriving at a status report in that area. While doing a seminar, the student is expected to learn investigation methodologies, study relevant research papers, correlate work of various authors/researchers critically, study concepts, techniques, prevailing results etc., analyze it and present a seminar report. It is mandatory to give a seminar presentation before a panel constituted for the purpose. The grading is done on the basis of the depth of the work done, understanding of the problem, report and presentation by the student concerned.

GUIDELINES FOR THE SEMINAR

A. Guidelines for preparation of Report:

- Report should have at least 30 and at most 50 pages.
- The entire pages of the report should be in A4 size strictly, with 1" top and bottom margin and 1.25" left and right margin.
- The entire report should be typed in Times New Roman with **(12Pt.)**
- The title and main headings of the paragraphs are to be in bold.
- Report may be divided into the number of chapters as required, with chapter number assigned on the top left corner and chapter name immediately below it (with single line spacing) using Times New Roman **(16 Pt.Bold).**

- Every sub heading should be given a decimal of the whole number of the heading.(e.g1.1).
- The complete text should be justified in the report (no left or right aligning).
- No short forms are to be used in the report besides the specified areas.
- Numbering of each figure and table should be done according to the chapter number.
- Numbering of each page should be done in the footer section at the bottom right corner.
- Each line should be separated by a line spacing of 1.5, and each paragraph by line spacing of 2..

B. List of Contents in the Report:

- The Cover
- Cover page. (Same as The Cover)
- Certificate from Department
- Acknowledgement.
- Abstract.
- Table of content.
- List of figures and tables
- The report.
- References and appendices.

C. Guidelines for Presentation:

- The presentation shall be limited to 15 minutes plus 10 minutes questions and answers. There will be credit for the novelty of the topic, contents of the seminar, the effectiveness of presentation, and the way questions and queries are answered.
- Presentations shall be prepared using presentation software like MS PowerPoint. If necessary, use charts, drawings, etc.
- Write only points on the slides (use telegraphic language instead of long sentences). The slides shall NOT be a copy of the text of one's seminar report. Ideally 6 to 8 lines only shall be there on each slide.
- Equations shall be given in the final form only. Derivations shall be avoided on slides. However, the derivations can be prepared as separate slides with links from the main presentation so that the same can be used if need arises.
- Use colors to make the slides attractive and to highlight the important points. However, remember that the use of too many different colors can make the slides ugly.
- Choose the letter sizes corresponding to the importance of the points. Use bold/italics or different colors to stress words or sentences of importance.
- Ensure that all the material presented on slides is legible when projected.

Reading of the written/typed material or from the slides is not acceptable.

Program:	B. Tech. (IT/Comp/EnTC-Honors)			Semester :	VIII/ VII		
Course : **Project**				Code : **HIT8983/ HIT7983**			
Teaching Scheme				**Evaluation Scheme**			
Lecture	**Practical**	**Tutorial**	**Credit**	**TW**	**OR**	**PR**	**Total**
-	10	-	5	50	100	-	150

Course Objectives:

After completion of the course, students will have adequate background, conceptual clarity and knowledge related to:

1. Implement their ideas/real time industrial problems and current applications from their engineeringdomain.
2. Develop plans with help of team members to achieve the project's goals.
3. Break work down into tasks and determine appropriate procedures.
4. Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources.
5. Allocate roles with clear lines of responsibility and accountability and learn team work ethics.
6. Apply communication skills to effectively promote ideas, goals or products.

Course Outcomes:

After learning the course, the students should be able :

1. Identify the real life problem from societal need point of view
2. Choose and compare alternative approaches to select most feasible one
3. Analyze and synthesize the identified problem from technological perspective
4. Design the reliable and scalable solution to meet challenges
5. Evaluate the solution based on the criteria specified
6. Inculcate long life learning attitude towards the societal problems

GUIDELINES FOR THE PROJECT

- The Head of the department/Project coordinator shall constitute a review committee for the project group; project guide would be one member of that committee by default.
- There shall be 4 reviews by the review committee.
- The Project Review committee will be responsible for evaluating the timely progress of the projects.
- As far as possible Students should finalize the same project title taken for Project Based Seminar (PBS).
- Student should Identify Project of enough complexity, which has at least 4-5 major functionalities
- Student should identify stakeholders, actors and write detail problem statement for system
- Review committee should revisit “Feasibility Review” conducted by Examiners during Oral examination in Third year in the first week after commencement of the term.
- Review committee should finalize the scope of the project.

- The students or project group shall make a presentation on the progress made by them beforethe committee.
- The record of the remarks/suggestions of the review committee should be properly maintainedand should be made available at the time of examination.
- Each student/group is required to give a presentation as part of review for 10 to 15 minutes followed by a detailed discussion.
- Students should revisit and Reassess the problem statement mentioned in the project- based seminar activity.

Review 1: Synopsis – Deliverables:

1. The precise problem statement/title based on literature survey and feasibility study.
2. Purpose, objectives and scope of the project. List of required hardware, software or otherequipment for executing the project, test Environment/tools, cost and human efforts in hours.
3. System overview- proposed system and proposed outcomes.
4. Architecture and initial phase of design (DFD).
5. Project plan 1.0.

Review 2: SRS –Deliverables:

1. SRS and High level design
2. Detail architecture/System design/algorithms/techniques
3. At least 30-40% coding documentation with at least 3 to 4 working modules
4. Test Results
5. Project plan 2.0

Review 3: Based on Implementation (50% implementation expected)

Review 4: Complete Project and Testing

Project report contains the details as Follows:

One paper should be published in a reputed International conference/International journal basedon project work done.

Contents
List of Abbreviations
List of Figures
List of Graphs
List of Tables

1. Introduction and aims/motivation and objectives
2. Literature Survey
3. Problem Statement/definition
4. Project Requirement specification
5. Systems Proposed Architecture
6. High level design of the project(DFD/UML)
7. System implementation-code documentation-algorithm, methodologies, protocols used.
8. GUI/Working modules/Experimental Results
9. Project Plan
10. Conclusions
11. Bibliography in IEEE format

Appendices

A. Plagiarism Report of Paper and Project report from any open source tool
B. Base Paper(s)
C. Tools used
D. Papers Published/Certificates

Use appropriate plagiarism tools, reference managers, Latex Lyx/latest Word for efficient andeffective project writing.

Term Work:

The term work will consist of a report and presentation prepared by the student on the project allotted to them.

Vision and Mission of Information Technology Department

Department Vision

To become a front-runner in the western region in preparing Information Technology engineers with academic excellence and research skills empowering their roles in technology and society.

Department Mission

1. To equip students with the skills and knowledge through a dynamic learning environment
2. To collaborate with industries to nurture proficient Information Technology Engineers
3. To cultivate a spirit of research, innovation, and entrepreneurship to address community and business challenges.
4. To imbibe work ethics and leadership skills through co-curricular and extracurricular activities.