Department : **IEDC**			Programme: **B.Tech.**				
Semester : **Sixth**			Course Category Code: **PAC**		Semester Exam Type: **TY**		
Course Code	Course Name		Periods / Week		Credit	Maximum Marks	
			L	T	P	C	CA	SE	TM

Course Code	Course Name	L	T	P	C	CA	SE	TM
EP201	**Entrepreneurship**	3	-	-	2	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Attain conceptual understanding of entrepreneurship and design thinking
	CO2	Understand about business model development and MVP
	CO3	Analyze about costing and revenue
	CO4	Learn about marketing and sales
	CO5	Realize about team formation and compliance requirements

UNIT-I	**Problem and Customer**	**Periods: 9**
Effectuation, Finding the flow. Entrepreneurial style, business opportunity, problems worth solving, methods for finding problems, problem interviews. Design Thinking, Consumer and customer, market types, segmentation and targeting, early adopters, Gains, Pains and Jobs-To be done, Value Proposition Canvas (VPC), Identifying Unique Value Proposition (UVP).		**CO1**

UNIT-II	**Business Model and Validation**	**Periods: 9**
Types of Business Models, Lean Canvas, Risks. Building solution demo, solution interviews, problem-solution test, competition, Blue Ocean Strategy. MVP- Build-Measure-Learn feedback loop, MVP Interviews, MVP Presentation.		**CO2**

UNIT-III	**Revenue and Cost**	**Periods: 9**
Revenue Streams-Income, costs, gross and net margins - primary and secondary revenue streams-Different pricing strategies - product costs and Operations costs; Basics of unit costing. Financing New Venture- various sources - investor expectation- Pitching to Investors.		**CO3**

UNIT-IV	**Marketing and Sales**	**Periods: 9**
Difference between product and brand - positioning statement. Building Digital Presence, Social media- company profile page – Sales Planning - buying decisions, Listening skills, and targets. Unique Sales Proposition (USP), sales pitch, Follow-up and closing a sale.		**CO4**

UNIT-V	**Team and Support**	**Periods: 9**
Team Building - Shared leadership - role of a good team - team fit - defining roles and responsibilities - collaboration tools and techniques- project management, time management, workflow, delegation of tasks. Business regulations - starting and operating a business - compliance requirements.		**CO5**

Lecture Periods: 45	Tutorial Periods: -	Practical Periods: -	Total Periods: 45

Reference Books

1. Nandan H, Fundamentals of Entrepreneurship, Prentice Hall India, 2013.
2. Khanka S.S, Entrepreneurial Development, S Chand & Company, 2007.
3. Sangeetha Sharma, Entrepreneurship Development, Prentice Hall India, 2017.
4. Anil Kumar.S, Entrepreneurship Development, New Age Publishers, 2003.
5. LearnWISE–Digital learning platform by Wadhwani Foundation, www.learnwise.org.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**				
Semester : **Sixth**		Course Category Code: **PCC**			Semester Exam Type: **TY**	
Course Code	Course Name	Periods / Week			Credit	Maximum Marks

Course Code	Course Name	L	T	P	C	CA	SE	TM
CS220	**Microprocessors and Microcontrollers**	3	-	-	3	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Describe the basic concepts and functions and programming aspects of 8085 microprocessors
	CO2	Understand and implement assembly language programs based on 8086 microprocessor
	CO3	Interface microprocessor with different kinds of peripherals
	CO4	Understand, design and execute programs based on microcontroller
	CO5	Design and implement microcontroller based systems

UNIT-I	**8-bit Microprocessor Architecture and Programming**	**Periods: 9**

Introduction - Evolution of Microprocessors- Intel 8085 Microprocessor Architecture – Pin Description - Addressing Modes – Instruction Set – Assembly Language Programming - Stacks and Subroutines - Timing Diagrams.	**CO1**

UNIT-II	**16-bit Microprocessor Architecture and Programming**	**Periods: 9**

Introduction - Intel 8086 Microprocessor Architecture – Pin description – External Memory Addressing – Bus Cycles. – Addressing Modes - Instruction Set – Directives – Assembly Language Programming - BIOS (11H to 14H) and DOS interrupt (21H) functions for console.	**CO2**

UNIT-III	**Memory, Peripheral Interfacing and Applications**	**Periods: 9**

Introduction - Memory Interfacing and I/O interfacing - Parallel communication interface and Serial communication interface using 8086 Microprocessor – D/A and A/D Interface - Timer – Interrupt controller – DMA controller using 8085 Microprocessor. Application of microprocessors: LCD display, Turbine Monitor and Traffic Light control System.	**CO3**

UNIT-IV	**Introduction to Microcontroller**	**Periods: 9**

RISC versus CISC – ARM Processor Fundamentals -ARM 7 Architecture – LPC2148 microcontroller introduction – Internal memory map –Thumb/ARM instructions – Assembly Language Programming. Peripheral details – Implementation of GPIO, Timer/Counter, UART, Interrupt architecture – ADC and DAC. SPI, I2C and USB features of LPC2148.	**CO4**

UNIT-V	**Programming and Applications of Microcontrollers**	**Periods: 9**

Firmware development using Embedded C – introduction to data types – conditional statements – loops – simple programs using embedded 'C'.Application of Microcontrollers: Traffic Light control system – DC Motor Speed control – Network Router.	**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Reference Books

1. Ramesh S. Gaonkar, Microprocessor Architecture, Programming and Applications with the 8085, Sixth Edition, Penram International Publications, 2013.

2. Krishna Kant, Microprocessors and Microcontrollers: Architecture, Programming and System Design 8085, 8086, 8051, 8096, Second Edition, PHI Learning Pvt. Ltd., 2013.

3. A.K. Ray, K.M.Burchandi and A.K.Ray, Advanced Microprocessor and Peripherals, Third Edition, McGraw Hill International Edition, 2017.

4. Andrew N. Sloss Dominic Symes and Chris Wright, ARM System Developer's Guide Designing and Optimizing System Software, Morgan Kaughmann/Elsevier Publishers, 2006.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**					
Semester : **Sixth**		Course Category Code: **PCC**			Semester Exam Type: **TY**		
Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	SE	TM
CS221	**Web Technologies**	3	-	-	3	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Comprehend the basic concepts of internet, HTML tags
	CO2	Create a client side programs using Javascript
	CO3	Develop server side programs using servlets and JSP
	CO4	Construct web pages in PHP and to represent data in XML format
	CO5	Design a interactive web applications using AJAX and Web services

UNIT-I	**Internet Protocols, HTML 5.0,and DHTML**	**Periods: 9**	
Internet Principles and Components: Internet protocols – HTTP, SMTP, POP3, MIME, and IMAP. Domain Name Server, Web Browsers and Web Servers, Web Client. HTML 5.0: Anatomy of HTML document, text basics, rules, images and multimedia, document layout and webs, formatted lists, cascading style sheets, forms, tables, frames, and executable content. DHTML: Document Object Model and Collections, Event Handling, Filters and Transitions.			**CO1**

UNIT-II	**Client-Side Programming**	**Periods: 9**	
Client-Side Programming: Java Script: An introduction to JavaScript–JavaScript DOM Model-Date-Syntax-Variables and Data Types-Statements-Operators-Literals-Functions-Objects-Arrays-Built-in Objects-JavaScript Debuggers and Regular Expression.			**CO2**

UNIT-III	**Server Side Programming**	**Periods: 9**	
Servlets: Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling-Understanding Cookies- Installing and Configuring Apache Tomcat Web Server, Database Connectivity: JDBC perspectives, JDBC program example. JSP: Introduction-Components-Read Request Information-JSP Standard Tag Library (JSTL)-Creating HTML forms by embedding JSP code.			**CO3**

UNIT-IV	**PHP and XML**	**Periods: 9**	
PHP: Introduction to PHP- Variables- Program control- Built-in functions-Connecting to Database – JSON(basics) – MVC framework - XML: Basic XML-Attributes- Document Type Definition- Validation-DTD Elements-DTD Attributes-Entities-XSL.			**CO4**

UNIT-V	**Introduction To Ajax and Web Services**	**Periods: 9**	
AJAX: Introduction-Server response- Database Connectivity; Web Services: Introduction to Web Services, UDDI, SOAP, WSDL, Web Service Architecture, Developing and Deploying web services.			**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Reference Books

1. Deitel and Goldberg, Internet and World Wide Web – How to Program, Fifth Edition, Pearson Education Asia, 2011.
2. Uttam K.Roy, Web Technologies, First Edition, Oxford University Press, 2012.
3. Eric Newcomer, Understanding Web Services: XML, WSDL, SOAP, and UDDI, Addison-Wesley, Platinum Edition, 2002.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**					
Semester : **Sixth**		Course Category Code: **PCC**			Semester Exam Type: **TY**		
Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	SE	TM
CS222	**Information Security**	3	1	-	4	40	60	100
Prerequisite	**Nil**							

Course Outcome		
Course Outcome	**CO1**	Understand the need of Information security
	CO2	Familiar with the legal laws and regulatory bodies
	CO3	Understand basic cryptographic algorithms and security issues
	CO4	Analyze the various security technologies and predict the need of physical security
	CO5	Understand the scope of security personnel and security management maintenance models

UNIT-I	**Introduction to Security and Needs**	**Periods: 12**

Introduction to security - CNSS Security model-Components of an Information System – Balancing Information Security and access – Approaches to Information security Implementation- Security professionals and the organization - need of Security- Threats and attacks- Compromises to Intellectual property- Deviation in Quality of Service- Espionage – Human error – Software attacks- Hardware and software failures.	**CO1**

UNIT-II	**Legal Laws, Security Planning and Risk**	**Periods: 12**

Introduction – Laws and Ethics – Relevant U.S. Laws- International Laws and Legal Bodies – Code of Ethics of Professional Organizations- Planning for security – Planning and Governance – Security Policy, Standard and Practices- Information Security Blue print –Security Education, Training and Awareness Program- Risk Identification, Assessment and Control – Risk Management Practices- Risk Control Practices.	**CO2**

UNIT-III	**Security Technologies and Cryptography**	**Periods: 12**

Introduction - Access Control – Firewall – Protecting Remote Connections- IDS – Honey pots and Padded Cell system – Foundations of Cryptography – Cipher methods- Cryptographic Algorithms – Cryptographic Tools- Protocols for Secure Communication.	**CO3**

UNIT-IV	**Physical Security**	**Periods: 12**

Introduction – Physical Access Control – Fire safety and Security- Failure of Supporting Utilities – Structural Collapse- Interception of Data – Securing mobile and Portable systems – Special consideration for physical security. Implementing Information Security: IS Security project Management – Technical and Non technical Aspects of Implementation.	**CO4**

UNIT-V	**Security Personnel and Maintenance**	**Periods: 12**

Positioning and Staffing the Security Function – Credentials for Information Security Professionals- Employment Policies and Practices – Security Management Maintenance Models – Digital Forensics.	**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Reference Books

1. Michael E Whitman and Herbert J Mattord, Principles of Information Security, Sixth Edition, Vikas Publishing House, New Delhi, 2018.
2. Micki Krause and Harold F. Tipton, Handbook of Information Security Management A Handbook, Sixth Edition, Auerbach Publication, Volume 2, 2018.
3. Matt Bishop, Computer Security Art and Science, Addison-Wesley Professional Pearson/PHI, 2002.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**				
Semester : **Sixth**		Course Category Code: **PCC**		Semester Exam Type: **LB**		

Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	SE	TM
CS223	**Microprocessors and Microcontrollers Laboratory**	-	-	3	1.5	40	60	100

Prerequisite	**Nil**	
Course Outcome	**CO1**	Understand and apply the fundamentals of assembly level programming of microprocessors
	CO2	Design and develop assembly language programs using 8085 and 8086
	CO3	Interface 8085 and 8086 microprocessors with different kinds of peripherals
	CO4	Analyze the programming aspects of ARM microcontroller
	CO5	Train their practical knowledge through laboratory experiments

Experiments using 8085 kit	
1. Study of 8085 Microprocessor 2. Implementation of 8 bit and 16 bit Arithmetic operations 3. Implementation of Code Conversions 4. Implementation of Array Operations 5. Simulation of Digital Clock 6. Simulation of Rolling Display	**CO1** **CO2** **CO5**
Experiments Using 8086 Microprocessor with MASM	
7. Arithmetic operations: Multi-byte Addition, Subtraction, Multiplication, Division. 8. Searching and Sorting 9. String Operations 10. Traffic light control 11. Stepper motor control 12. Serial and Parallel Interface	**CO1** **CO2** **CO3** **CO5**
Experiments Using ARM Controller	
13. Implementation of Simple Programs in LPC2141 14. Implementation of Interrupts in LPC2148. 15. Implementation of UART features of ARM LPC2148. 16. Interfacing SD card and Graphical LCD using LPC2148. 17. Implementation of SPI and I2C communication using LPC2148. 18. Implementation of USB communication using LPC2148	**CO4** **CO5**

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 45	Total Periods: 45

Reference Books

1. Ramesh S. Gaonkar, Microprocessor Architecture, Programming and Applications with the 8085, Sixth Edition, Penram International Publications, 2013.
2. Krishna Kant, Microprocessors and Microcontrollers: Architecture, Programming and System Design 8085, 8086, 8051, 8096, Second Edition, PHI Learning Pvt. Ltd., 2013.
3. A.K. Ray, K.M.Burchandi and A.K.Ray, Advanced Microprocessor and Peripherals, Third Edition, McGraw Hill International Edition, 2017.
4. Andrew N. Sloss Dominic Symes and Chris Wright, ARM System Developer's Guide Designing and Optimizing System Software, Morgan Kaughmann/Elsevier Publishers, 2006.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**					
Semester : **Sixth**		Course Category Code: **PCC**			Semester Exam Type: **LB**		
Course Code	Course Name	Periods / Week			Credit	Maximum Marks	
		L	T	P	C	CA	SE	TM
CS224	**Web Technologies Laboratory**	-	-	3	1.5	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Practise HTML working environment
	CO2	Comprehend the usage of client side program in Javascript
	CO3	Apply various server side programs using Java servlets and JSP
	CO4	Design a web applicationsin PHP and XML
	CO5	Developing ecommerce applications using Ajax and web services

1. Study of basic HTML tags 2. Creation of website using HTML	**CO1**
3. Implementation of Client Side Scripting in JavaScript	**CO2**

4. Implementation of Server Side Scripting in Java Servlets and JSP
    a. Establishing Data Base Access Programming
    b. Session and Application objects
    c. c. Database Connectivity
	CO3

5. Designing a Website using PHP 6. Developing Web Applications using XML	**CO4**
7. Developing Web Services 8. Designing a website in Ajax 9. Developing E-commerce application using internet programming (Mini Project)	**CO5**

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 45	Total Periods: 45

Reference Books
1. Deitel and Goldberg, Internet and World Wide Web – How to Program, Fifth Edition, Pearson Education Asia, 2011.
2. Uttam K. Roy, Web Technologies, First Edition, Oxford University Press, 2012.
3. Eric Newcomer, Understanding Web Services: XML, WSDL, SOAP, and UDDI, Addison-Wesley, Platinum Edition, 2002.