



### List of Revised Courses

Department	:	Information Technology
Programme Name	:	B.Tech.
Academic Year : 2022-23		

### List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	IT205TPC01	DATABASE MANAGEMENT SYSTEMS
02.	IT205PPC01	DATABASE MANAGEMENT SYSTEMS LAB
03.	IT206TPC02	COMPUTER NETWORKS
04.	IT206PPC01	COMPUTER NETWORKS LAB
05.	IT206PPE21	MICROPROCESSOR & MICROCONTROLLER LAB



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2022-23	
School	: <i>School of Engineering &amp; Technology</i>
Department	: <i>Information Technology</i>
Date and Time	: <i>15 June 2022, 11:00 AM</i>
Venue	: <i>Smart Class Room G-14 [Hybrid Mode]</i>



Sess. 2022-23

### **Minutes of Meeting Dated 15/06/2022**

A Meeting of BoS in Information Technology was held today on 15/06/2022 at AM. The Following Members have attended the meeting.

1. Dr. Rohit Raja, BoS Chairman, Dept. of Information Technology, SoS-E&T, G
2. Prof. Apurva Desai, Professor, Veer Narmad South Gujarat University
3. Ms. Ashwini Jha, Software Developer, Persistent
4. Mr. Pankaj Chandra, Member, BoS, Dept. of IT, SoS-E&T, GGV.
5. Dr. Rajesh Mahule, Invited Member
6. Dr. Santosh Soni, Invited Member
7. Mr. Abhishek Jain, Invited Member
8. Mr. Agnivesh Pandey, Invited Member
9. Mr. Deepak Kant Netam, Invited Member
10. Mr. Amit Kumar Dewangan, Invited Member.

The Head of Department welcomed all members of BoS in the meeting and the following agenda was discussed in the meeting.

1. The Scheme and Syllabus of B.Tech. IT - 3<sup>rd</sup> Year 2022-23 (5<sup>th</sup> and 6<sup>th</sup> Sem) CBCS has been discussed and approved.
2. One lab subject (Advanced Data Structures lab) is replaced by Wireless Network Lab in M.Tech 1<sup>st</sup> Sem.

The following courses were revised in the of B. Tech. Third year (5<sup>th</sup> and 6<sup>th</sup> Semes

- ❖ DATABASE MANAGEMENT SYSTEMS (IT205TPC01)
- ❖ DATABASE MANAGEMENT SYSTEMS LAB (IT205PPC01)
- ❖ COMPUTER NETWORKS (IT206TPC02)
- ❖ COMPUTER NETWORKS LAB (IT206PPC01)
- ❖ MICROPROCESSOR & MICROCONTROLLER LAB (IT206PPE21)

The following new courses were introduced in Third year (5<sup>th</sup> and 6<sup>th</sup> Semes:



❖ PYTHON PROGRAMMING LAB (IT205PPC02)

❖ WIRELESS SENSOR NETWORK LAB (ITPALT2)

The meeting ended with a vote of thanks by Head of the Department.

Dr. Rohit Raja  
BoS Chairman

(Consent Taken Through Mail)  
Prof. Apurva Desai Professor  
Veer Narmad South Gujrat  
University

(Consent Taken Throu  
Ms. Ashwini Jha  
Software Developer  
Persistent

Mr. Pankaj Chandra  
Member, BoS

Dr. Rajesh Mahule  
Invited Member

Dr. Santosh Soni  
Invited Member

Mr. Agnivesh Pandey  
Invited Member

Mr. Abhishek Jain  
Invited Member

Mr. Deshak Kant Neta  
Invited Member

Mr. Amit Kumar Dewangan  
Invited Member



## Scheme and Syllabus

SCHEME FOR EXAMINATION  
B.TECH (FOUR YEAR) DEGREE COURSE  
THIRD YEAR, INFORMATION TECHNOLOGY  
SEMESTER V  
EFFECTIVE FROM SESSION 2022-23

EFFECTIVE FROM SESSION 2022-23									
SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/ WEEK			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	TOTAL	
THEORY									
1	IT205TES07	SIGNALS & SYSTEMS	3	0	0	30	70	100	3
2	IT205TPC01	DATABASE MANAGEMENT SYSTEMS	3	0	0	30	70	100	3
3	IT205TPC02	FORMAL LANGUAGE & AUTOMATA THEORY	3	0	0	30	70	100	3
4	IT205TPC03	PYTHON PROGRAMMING	3	1	0	30	70	100	4
5	IT205TPE1X	ELECTIVE – I	3	0	0	30	70	100	3
PRACTICAL									
1	IT205PPC01	DATABASE MANAGEMENT SYSTEMS LAB	0	0	4	30	20	50	2
2	IT205PPC02	PYTHON PROGRAMMING LAB	0	0	4	30	20	50	2
3	IT205PMC01	CONSTITUTION OF INDIA/ ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	-	-	2	-	-	-	0
TOTAL CREDITS									20
IA- INTERNAL ASSESSMENT, ESE-END SEMESTER EXAMINATION, L-LECTURE, T-TUTORIAL, P-PRACTICAL									

LIST OF ELECTIVE-I

1	IT205TPE11	SOFTWARE ENGINEERING
2	IT205TPE12	REAL TIME SYSTEM
3	IT205TPE13	CYBER LAW & ETHICS
4	IT205TPE14	EMBEDDED SYSTEMS



SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT205PPC01	0	0	4	4 HOURS	30	20	2

### Database Management Systems Lab

#### Course Objectives:

This course is designed to enable the students to:

1. Introduce ER data model, database design and normalization.
2. Learn SQL basics for data definition and data manipulation.

S.No.	Experiments
1	Concept design with E-R Model.
2	Relational Model.
3	Normalization.
4	Practicing DDL commands.
5	Practicing DML commands.
6	Querying (using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.).
7	Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8	Triggers (Creation of insert trigger, delete trigger, update trigger).
9	Procedures.
10	Usage of Cursors.

#### TEXT BOOKS:

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw Hill, V edition.

#### REFERENCES BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education.
3. Introduction to Database Systems, C.J. Date, Pearson Education.
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

#### Course Outcomes:

At the end of this course the student can answer how to:

1. Design database schema for a given application and apply normalization.
2. Acquire skills in using SQL commands for data definition and data manipulation.
3. Develop solutions for database applications using procedures, cursors and triggers.





SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT205TPC01	3	0	0	3 HOURS	30	70	3

### Database Management Systems

#### Course Objectives:

1. To understand the basic concepts and the applications of database systems.
2. To master the basics of SQL and construct queries using SQL.
3. Topics include data models, database design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

**Unit 1:** Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML). Data models: Entity-relationship model, network model, relational and object oriented data models, integrity constraints, data manipulation operations.

**Unit 2:** Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. Relational database design: Domain and data dependency, Armstrong's axioms, Normal forms, Dependency preservation, Lossless design. Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.

**Unit 3:** Storage strategies: Indices, B-trees, hashing. Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.

**Unit 4:** Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection.

**Unit 5:** Advanced topics: Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

#### Suggested books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.

#### Suggested reference books

1. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
2. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education.
3. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley.

#### Course Outcomes:

1. Gain knowledge of fundamentals of DBMS, database design and normal forms.
2. Master the basics of SQL for retrieval and management of data.
3. Be acquainted with the basics of transaction processing and concurrency control.
4. Familiarity with database storage structures and access techniques.



**SCHEME FOR EXAMINATION  
B.TECH (FOUR YEAR) DEGREE COURSE  
THIRD YEAR, INFORMATION TECHNOLOGY  
SEMESTER VI  
EFFECTIVE FROM SESSION 2022-23**

SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/ WEEK			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	TOTAL	
THEORY									
1	IT206TPC01	COMPILER DESIGN	3	0	0	30	70	100	3
2	IT206TPC02	COMPUTER NETWORKS	3	0	0	30	70	100	3
3	IT206TPE2X	ELECTIVE – II	3	0	0	30	70	100	3
4	IT206TPE3X	ELECTIVE – III	3	0	0	30	70	100	3
5		OPEN ELECTIVE - I	3	0	0	30	70	100	3
PRACTICAL									
1	IT206PPC01	COMPUTER NETWORKS LAB	0	0	4	30	20	50	2
2	IT206PPE2X	ELECTIVE – II LAB	0	0	4	30	20	50	2
3	IT206PPR11	PROJECT - I	0	0	6	30	20	50	3
TOTAL CREDITS									22
IA- INTERNAL ASSESSMENT, ESE-END SEMESTER EXAMINATION, L-LECTURE, T-TUTORIAL, P-PRACTICAL									

**LIST OF ELECTIVE - II**

1.	IT206TPE21	MICROPROCESSOR & MICROCONTROLLER
2.	IT206TPE22	WEB TECHNOLOGY & E-COMMERCE
3.	IT206TPE23	QUEUEING THEORY & MODELING
4.	IT206TPE24	IMAGE PROCESSING

**LIST OF ELECTIVE - II (LAB)**

1.	IT206PPE21	MICROPROCESSOR & MICROCONTROLLER LAB
2.	IT206PPE22	WEB TECHNOLOGY & E-COMMERCE LAB
3.	IT206PPE23	QUEUEING THEORY & MODELING LAB
4.	IT206PPE24	IMAGE PROCESSING LAB

**LIST OF ELECTIVE-III**

1.	IT206TPE31	GRID & CLOUD COMPUTING
2.	IT206TPE32	MULTIMEDIA SYSTEM DESIGN
3.	IT206TPE33	SPEECH & NATURAL LANGUAGE PROCESSING
4.	IT206TPE34	GRAPH THEORY

**LIST OF OPEN ELECTIVE-I**

S.No.	COURSE CODE	COURSE NAME	OFFERED BY	ELIGIBLE DEPARTMENT
1.	CH206TOE01	INDUSTRIAL UTILITIES AND SAFETY	CHEMICAL	CIVIL, CSE, ECE, IPE, IT & MECH
2.	CE206TOE01	METRO SYSTEMS AND ENGINEERING	CIVIL	CHEM, CSE, ECE, IPE, IT & MECH
3.	CS206TOE01	OBJECT ORIENTED PROGRAMMING WITH C++	CSE	CHEM, CIVIL, ECE, IPE, IT & MECH
4.	EC206TOE01	INTRODUCTION TO ELECTRONIC DEVICES AND CIRCUITS	ECE	CHEM, CIVIL, CSE, IPE, IT & MECH
5.	IP206TOE01	OPERATION RESEARCH	IPE	CHEM, CIVIL, CSE, ECE, IT & MECH
6.	IT206TOE01	COMPUTER GRAPHICS	IT	CHEM, CIVIL, CSE, ECE, IPE & MECH
7.	ME206TOE01	AUTOMOBILE ENGINEERING	MECHANICAL	CHEM, CIVIL, CSE, ECE, IPE & IT





SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT206PPC01	0	0	4	4 HOURS	30	20	2

### Computer Networks Lab

#### Course Objectives:

This course is designed to enable the students to:

1. Understand basic network models and Different transmission media used for data communication.
2. Understand the data link design issues and various data link protocols used for data transmission.
3. Comprehend different routing algorithms used for data transmission from source to destination in a network layer.
4. Know how internet addresses are configured and how internet protocols are used in connecting internet.

S.No.	Experiments
1	To configure the IP address for a computer connected to LAN and to configure network parameters of a web browser for the same computer.
2	a. Installing of internal modem and connecting to Internet. b. To configure WiFi for your PC.
3	Study of Stop and Wait Protocol.
4	Study of Go Back N Protocol.
5	Study of Selective Repeat Protocol.
6	Study of Networking Devices.
7	Study of LAN, MAN and WAN.
8	To practice the color code for different cables.
9	To construct Peer to Peer Topology.
10	To Construct Star Topology.

#### TEXT BOOKS

1. Data Communications and Networking – Behrouz A. Forouzan. TMH.
2. Computer Networks — Andrew S Tanenbaum, Pearson Education/PHI.
3. Data and Computer Communication by William Stalling (Pearson Education).

#### REFERENCE BOOKS

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson.
3. Computer Networking by Ed Tittel (Schaum's series) (TMH).
4. Comer, "Computer Networks and Internets with Internet Applications", Pearson Education.

#### Course Outcomes:

At the end of this course the student can answer how to:

1. By learning models students suggest appropriate network model for data communication.
2. Know how reliable data communication is achieved through data link layer.
3. Suggest appropriate routing algorithm for the network.
4. Provide internet connection to the system and its installation.



SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT206TPC02	3	0	0	3 HOURS	30	70	3

### Computer Networks

#### Course Objectives:

- To understand the working principle of various communication protocols.
- To analyze the various routing algorithms.
- To know the concept of data transfer between nodes.

**UNIT I** - Introduction: OSI and TCP/IP Reference models, Function of layers, Network Topologies, Categories of Network - LAN, WAN, MAN, Line Configuration, Transmission Modes, Networking Devices.

**UNIT II** - Data link layer: Design issues, framing, error detection and correction, CRC, Hamming Code Method, Elementary Protocol- stop and wait, Sliding Window, HDLC, Ethernet, CSMA/CD.

**UNIT III** - Network Layer: Design Issues, Forwarding and Routing, Virtual Circuit and Datagram Networks, shortest path routing – Dijkstra's algorithms, Link State Routing, Distance Vector Routing, Internet Protocol (IP), Hierarchical Routing – RIP – OSPF – BGP.

**UNIT IV** - Transport Layer: Transport Layer Services, Transmission Control Protocol, TCP header, 3 way Handshake, UDP, UDP header, Difference between TCP and UDP, Reliable Data Transfer – Go Back N and Selective Repeat.

**UNIT V** - Application Layer: Principles of Network Applications, Encryption, Compression, Cryptography: Substitution and Transposition Ciphers, Data functions: translation, Encryption standards (DES), RSA, Email, World Wide Web, file transfer protocol, VoIP, TFTP.

#### TEXT BOOKS

1. Data Communications and Networking – Behrouz A. Forouzan. TMH.
2. Computer Networks — Andrew S Tanenbaum, Pearson Education/PHI.
3. Data and Computer Communication by William Stalling (Pearson Education).

#### REFERENCE BOOKS

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson.
3. Computer Networking by Ed Tittel (Schaum's series) (TMH).
4. Comer, "Computer Networks and Internets with Internet Applications", Pearson Education.

#### Course Outcomes :

1. Understand fundamental underlying principles of computer networking
2. Understand details and functionality of layered network architecture.
3. Apply mathematical foundations to solve computational problems in computer networking.
4. Analyze performance of various communication protocols.
5. Compare routing algorithms.



SUB CODE	L	T	P	DURATION	IA	ESE	CREDITS
IT206PPE21	0	0	4	4 HOURS	30	20	2

### Microprocessor & Microcontroller Lab

#### Course Objectives:

Students will be able to.

1. To expose students to the operation of typical microprocessor (8086) trainer kit.
2. To prepare the students to be able to solve different problems by developing different programs in assembly language.
3. To develop the quality of assessing and analyzing the obtained data.
4. To understand and hands on training of Interfacing of devices.

S.No.	Experiments with 8086 Microprocessor
1	To perform addition & subtraction of two 8 – bit hexadecimal numbers.
2	To perform addition & subtraction 16 – bit hexadecimal numbers.
3	To perform addition & subtraction 32 – bit hexadecimal numbers.
4	To perform addition & subtraction of two 8 – bit decimal numbers and store the result in DX register.
5	To perform addition & subtraction of two decimal digits n and m using ASCII code store the result in ASCII format. Where n and m are decimal number with single decimal digits.
6	To perform addition & subtraction of two decimal digits n and m using ASCII code store the result in ASCII format in CX-BX register. Where n and m are decimal number with two decimal digits.
7	To perform multiplication of n and m. Where n and m are hexadecimal numbers.
8	To perform division of 16 – bit number with 8-bit number.
9	To perform multiplication of two 8-bit numbers using ASCII code store the result in ASCII form in DX. Register.
10	To perform division of two 8-bit numbers using ASCII code store the result in ASCII form in DX register.
11	To solve Arithmetic equation $3AX+5DX+BP$ and store the result in CX register.
12	To solve Arithmetic equation $(P*Q)+(R*S)$ .
13	To add only positive number from 100 data bytes.
14	To write a program to add series of 20 bytes.
15	To find positive & negative byte from 100 data bytes.
16	To find largest & smallest byte from block of data.

S.No.	Experiments with 8051 Microcontroller
1	Data transfer/exchange between specified memory locations.
2	Largest/smallest from a series.
3	Sorting (Ascending/Descending) of data
4	Addition / subtraction / multiplication / division of 8/16 bit data.
5	Sum of a series of 8 bit data.
6	Multiplication by shift and add method.
7	Square / cube / square root of 8 bit data.
8	Matrix addition.



9	LCM and HCF of two 8 bit numbers.
10	Code conversion – Hex to Decimal/ASCII to Decimal and vice versa.
<b>Interfacing experiments using 8051 Trainer kit and interfacing modules (At least two Experiments are mandatory)</b>	
11	Time delay generation and relay interface.
12	Display (LED/Seven segments/LCD) and keyboard interface
13	ADC interface..
14	DAC interface with wave form generation.
15	Stepper motor and DC motor interface.
16	Realization of Boolean expression through port.

**Reference Books:**

1. IBM PC Assembly Language and Programming, P. Abel, 5th Edition, PHI/Pearson Education.
2. Introduction To Assembly Language Programming, SivaramaP.Dandamudi, Springer Int. Edition, 2003.
3. The 8088 and 8086 Microprocessors: Programming , Interfacing, Software, Hardware and Application, 4th edition, W.A. Triebel, A. Singh, N.K. Srinath, Pearson Education.

**Course Outcomes:**

On completion of this lab course the students will be able to:

1. Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller.
2. Work with standard microprocessor real time interfaces including GPIO, serial ports, digital-to-analog converters and analog-to-digital converters.
3. Troubleshoot interactions between software and hardware.
4. Analyze abstract problems and apply a combination of hardware and software to address the problem.
5. Design & Develop the solutions of problems using 8051 microcontroller.