Department of Information Technology

Syllabus of B.Sc. in Information Technology (Big Data Analytics)

(Effective from academic session 2019-20)

Semester-III

Name of the Course: B.Sc. in Information Technology (Big Data Analytics) **Subject:** Operating System & Operating System Lab			
Course Code: BITBDA301 & BITBDA391	**Semester: III**		
Duration: 36 Hrs.	**Maximum Marks: 100+100**		
Teaching Scheme	**Examination Scheme**		
Theory: 3 Hrs./week	End Semester Exam: 70		
Tutorial: 0	Attendance : 5		
Practical:4 Hrs./week	Continuous Assessment:25		
Credit: 3+2	Practical Sessional internal continuous evaluation:40		
	Practical Sessional external examination:60		
Aim:			
Sl. No.			
1.	General understanding of structure of modern computers		
2.	Purpose, structure and functions of operating systems		
3.	Illustration of key OS aspects by example		
Objective:			
Sl. No.			
1.	To learn the fundamentals of Operating Systems.		
2.	To learn the mechanisms of OS to handle processes and threads and their communication		
3.	To learn the mechanisms involved in memory management in contemporary OS		
4.	To gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols		
5.	To know the components and management aspects of concurrency management		
6.	To learn programmatically to implement simple OS mechanisms		
Pre-Requisite:			
Sl. No.			
1.	Strong programming skills (Knowledge of C)		
2.	Computer architecture		
3.	Elementary data structures and algorithms		
Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Introduction** Concept of Operating Systems, Generations of Operating systems, Types of Operating Systems, OS Services, System Calls, Structure of an OS - Layered, Monolithic, Microkernel Operating Systems, Concept of Virtual Machine. Case study on UNIX and WINDOWS Operating System.	**3**	**5**
02	**Processes** Definition, Process Relationship, Different states of a Process,	**8**	**20**

	Process State transitions, Process Control Block (PCB), Context switching Thread: Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads, Process Scheduling: Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF, RR; Multiprocessor scheduling: Real Time scheduling: RM and EDF.		
03	**Inter-process Communication:** Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer\ Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problem etc.	**4**	**5**
04	**Deadlocks** Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance: Banker's algorithm, Deadlock detection and Recovery.	**4**	**10**
05	**Memory Management** Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition– Internal and External fragmentation and Compaction; Paging: Principle of operation – Page allocation – Hardware support for paging, Protection and sharing, Disadvantages of paging. Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault , Working Set , Dirty page/Dirty bit – Demand paging, Page Replacement algorithms: Optimal, First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU).	**8**	**10**
06	**I/O Hardware** I/O devices, Device controllers, Direct memory access Principles of I/O Software: Goals of Interrupt handlers, Device drivers, Device independent I/O software, Secondary-Storage Structure: Disk structure, Disk scheduling algorithms File Management: Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency and performance.	**6**	**10**
07	**Disk Management** Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Disk reliability, Disk formatting, Boot-block, Bad blocks.	**3**	**10**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester	**4**	**30**

	Examination		
	Total:	**40**	**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Can be able to Identify the purpose of the analysis.
2. Can be considered a reliable source of information.
3. Can able to use a variety of techniques to extend the original idea.

List of Practical:

1. Basics of UNIX commands.
2. Shell programming
3. Implementation of CPU scheduling. a) Round Robin b) SJF c) FCFS d) Priority
4. Implement all file allocation strategies
5. Implement Semaphores
6. Implement Bankers algorithm for Dead Lock Avoidance
7. Implement an Algorithm for Dead Lock Detection
9. Implement the all page replacement algorithms a) FIFO b) LRU c) LFU 10. Implement Shared memory and IPC
10. Implement Paging Technique f memory management.
11. Implement Threading & Synchronization Applications

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
AviSilberschatz, Peter Galvin, Greg Gagne, Wiley Asia	Operating System Concepts Essentials	978-1-119-32091-3	
William Stallings	Operating Systems: Internals and Design Principles	5th Edition	Prentice Hall of India
Reference Books:			
Charles Crowley	Operating System: A Design-oriented Approach	1st Edition	Irwin Publishing
J. Nutt, Addison-Wesley	Operating Systems: A Modern Perspective	2nd Edition	
Maurice Bach	Design of the Unix Operating Systems	8th Edition	Prentice-Hall of India
Daniel P. Bovet, Marco Cesati	Understanding the Linux Kernel	3rd Edition	O'Reilly and Associates
List of equipment/apparatus for laboratory experiments:			
Sl. No.			

1.		**Computer**					
2.		**Linux/Ubantu operating system**					
End Semester Examination Scheme.		**Maximum Marks-70.**				**Time allotted-3hrs.**	
Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 7**	**10**	**10**				**60**
B	**1 to 7**			**5**	**3**	**5**	
C	**1 to 7**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Examination Scheme for Practical Sessional examination:

Practical Internal Sessional Continuous Evaluation

Internal Examination:

Continuous evaluation			**40**

External Examination: Examiner-

Signed Lab Note Book	**10**	
On Spot Experiment	**40**	
Viva voce	**10**	**60**

Name of the Course: B.Sc. in Information Technology (Big Data Analytics) **Subject:** Database Management System & Database Management System LAb	
Course Code: BITBDA302 & BITBDA392	**Semester: III**
Duration: 36 Hrs.	**Maximum Marks: 100+100**
Teaching Scheme	**Examination Scheme**
Theory: 3 Hrs./week	End Semester Exam: 70
Tutorial: 0	Attendance : 5
Practical:4 Hrs./week	Continuous Assessment:25
Credit: 3+2	Practical Sessional internal continuous evaluation:40
	Practical Sessional external examination:60

Aim:	
Sl. No.	
1.	To store and transform data into information
2.	To organize the data in the form of table, schema and report forms
3.	To provide security of data
4.	Data is stored in either hierarchical form or a navigational form

Objective:	
Sl. No.	
1.	Understand the uses the database schema and need for normalization
2.	Experience with SQL
3.	Use different types of physical implementation of database
4.	Use database for concurrent use

Pre-Requisite:	
Sl. No.	
1.	Elementary knowledge about computers including some experience using UNIX or Windows
2.	Computer Programming & Utilization

Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**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.	**6**	**15**
02	**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.	**12**	**25**

03	**Storage strategies** Indices, B-trees, hashing.	**6**	**10**
04	**Transaction processing** Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.	**8**	**15**
05	**Advanced topics** Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.	**4**	**5**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Can be able to implement the plan .
2. Can be able to use a variety of techniques to extend the original idea.
3. Can be able to analyze relevant data.
4. Can be considered valid by the fact of it.

List of Practical: Sl. No. 1& 2 compulsory & at least three from the rest)

1. Design a Database and create required tables. For e.g. Bank, College Database
2. Apply the constraints like Primary Key , Foreign key, NOT NULL to the tables.
3. Write a sql statement for implementing ALTER,UPDATE and DELETE
4. Write the queries to implement the joins
5. Write the query for implementing the following functions: MAX(),MIN(),AVG(),COUNT()
6. Write the query to implement the concept of Intergrity constrains
7. Write the query to create the views
8. Perform the queries for triggers
9. Perform the following operation for demonstrating the insertion , updation and deletion using the referential integrity constraints.
10. Write the query for creating the users and their role.

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Abraham Silberschatz, Henry F. Korth, S. Sudarshan	Database System Concepts	6th Edition	McGraw-Hill
R. Elmasri and S.	Fundamentals of	5th Edition	Pearson Education

Navathe	Database Systems		
Reference Books:			
J. D. Ullman	Principles of Database and Knowledge – Base Systems		Computer Science Press
Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley	Foundations of Databases		
List of equipment/apparatus for laboratory experiments:			
Sl. No.			
1.	Computer/Laptop		
2.	Oracle /Mysql		

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 5**	**10**	**10**				**60**
B	**1 to 5**			**5**	**3**	**5**	
C	**1 to 5**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Examination Scheme for Practical Sessional examination:

Practical Internal Sessional Continuous Evaluation

Internal Examination:

Continuous evaluation			**40**

External Examination: Examiner-

Signed Lab Note Book	**10**	
On Spot Experiment	**40**	
Viva voce	**10**	**60**

Name of the Course: B.Sc. in Information Technology (Big Data Analytics) **Subject:** Object-Oriented Programming with Java & Object Oriented Programming with Java Lab			
Course Code: BITBDA303 & BITBDA393		**Semester: III**	
Duration: 36 Hrs.		**Maximum Marks: 100+100**	
Teaching Scheme		**Examination Scheme**	
Theory: 3 Hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical:4 Hrs./week		Continuous Assessment:25	
Credit: 3+2		Practical Sessional internal continuous evaluation:40	
		Practical Sessional external examination:60	
Aim:			
Sl. No.			
1.	To understand Basic concepts of OOPs		
2.	To Learn programming by class and object model		
3.	Get knowledge Java programming		
Objective:			
Sl. No.			
1.	To learn the fundamentals of Java programming such as data types, variables and arrays.		
2.	To study the syntax and necessity of decision making and iterative statements.		
3.	To create a class and invoke the methods.		
4.	To instigate programming in overloading of methods.		
5.	To emphasize the concept of packages.		
6.	To learn the exception handling routines.		
Pre-Requisite:			
Sl. No.			
1.	The fundamental point in learning programming		
2.	Basic knowledge of algorithms and procedural programming		
Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Introduction:** Why object orientation, History and development of object oriented programming language, concepts of object oriented programming language. Difference between OOP and other conventional programming – advantages and disadvantages. Data types, variables. Array, operators. String, I/O. Control statements. Object oriented design: Major and minor elements, class fundamentals. Declaring objects, instantiation of class, introducing methods. Constructing objects using constructor. Static variable, constants. Visibility modifiers.	**12**	**20**
02	**Object Properties:** Introduction to basic features of a class (encapsulation,	**12**	**25**

	polymorphism etc) Data field encapsulation. Passing objects to methods. Array of objects, 'This' keyword Relationships among objects: aggregation, composition, dependency, links. Relationship among classes: association, aggregation. Meta class, meta object. Grouping constructs.		
03	**Basic concepts of object oriented programming using Java:** Using objects as parameters, closure look at argument passing, returning objects. Introducing access control, Final keyword, garbage collection, Nested and inner classes. Class abstraction and encapsulation, Overloading of methods (overloading of constructor). Super class, subclasses, super keyword, inheritance, types, member access. Multilevel hierarchy, process of constructor calling in inheritance. Overriding methods, overriding vs. overloading, polymorphism. Abstract class, interface & comparison between abstract class and interface Packages, importing packages. Exception handling basics, types, using try &catch, throw, throws & finally. Threading, synchronization & priorities, thread class, creating thread. Basic applet programming. Life cycle.	**12**	**25**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Students will be able to implement basic data structure and control statements in object oriented programming.
2. Student will be able to design class with its basic features.
3. Students can write programs using Java to implement OOP
4. Student will be able to design object oriented programs with the concept of object, class, abstraction, encapsulation, inheritance etc. to provide flexibility, modularity and re-usability in programming.
5. They can also be able to design Meta classes and grouping construct.

List of Practical:

1. Introduction to Java and JDK
2. Java Fundamentals - Data Types, Control Loops
3. Java Fundamentals - Wrapper Classes, Arrays
4. Classes and Objects 5 Inheritance
5. Abstract Class & Interface
6. File I/O and Exception Handling
7. Graphical User Interface (GUI) Programming with Java Swing
8. Applets
9. Java Threads

Assignments:
Based on the curriculum as covered by subject teacher.

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Rambaugh, James Michael, Blaha	Object Oriented Modelling and Design		Prentice Hall
Patrick Naughton, Herbert Schildt	The complete reference-Java2		TMH
Reference Books:			
Sourav Sahay	"Object-Oriented Programming with C++		Oxford
Blaha, Rumbaugh	Object-Oriented Modeling and Design with UML		Pearson Ed
. Ali Bahrami	Object Oriented System Development		Mc Graw Hill

List of equipment/apparatus for laboratory experiments:

Sl. No.	
1.	**Computer**
2.	**JDK**

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 3**	**10**	**10**				**60**
B	**1 to 3**			**5**	**3**	**5**	
C	**1 to 3**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**

C	**All**	**15**	**3**	**3**
Examination Scheme for Practical Sessional examination:				
Practical Internal Sessional Continuous Evaluation				
Internal Examination:				
Continuous evaluation				**40**
External Examination: Examiner-				
Signed Lab Note Book			**10**	
On Spot Experiment			**40**	
Viva voce			**10**	**60**

Name of the Course: B.Sc. in Information Technology (Big Data Analytics) **Subject:** Inferential Statistics			
Course Code: BITBDA304		**Semester: III**	
Duration: 48 Hrs.		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 3 Hrs./week		End Semester Exam: 70	
Tutorial: 1 Hrs./week		Attendance : 5	
Practical:0		Continuous Assessment:25	
Credit: 4		Practical Sessional internal continuous evaluation:NA	
		Practical Sessional external examination:NA	
Aim:			
Sl. No.			
1.	To learn how to set up and perform hypothesis tests		
2.	Use regression analysis to analyze and interpret data collected from ANOVA and ANCOVA designs.		
Objective:			
Sl. No.			
1.	To enable students to analyze and interpret data		
2.	Understand the types of questions that the statistical method addresses		
3.	To evaluate the reliability and validity of a measuring		
4.	Apply the method to other examples and situations		
5.	Use data to make evidence based decisions that are technically sound		
Pre-Requisite:			
Sl. No.			
1.	Mathematics		
2.	Probability Statistics		
Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Estimation: Concepts of estimation, unbiasedness, sufficiency, consistency and efficiency. Factorization theorem. Complete statistic, Minimum variance unbiased estimator (MVUE) and Rao-Blackwell theorem with applications. Cramer-Rao inequality and MVB estimators (statement and applications).	**9**	**10**
02	Methods of Estimation: Method of moments, method of maximum likelihood estimation.	**3**	**5**
03	Principles of test of significance: Null and alternative hypotheses (simple and composite), Type-I and Type-II errors, critical region, level of significance, size and power, best critical region, most powerful test, uniformly most powerful test,	**12**	**20**
04	Neyman Pearson Lemma (statement and applications to construct most powerful test). Likelihood ratio test and relevant problems, properties of likelihood ratio tests (without proof).	**12**	**15**

05	Interval estimation - Confidence interval for the parameters of various distributions, Confidence interval for Binomial proportion, Confidence interval for population correlation coefficient for Bivariate Normal distribution, Pivotal quantity method of constructing confidence interval, Large sample confidence intervals.	**12**	**20**
	Sub Total:	**48**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**52**	**100**

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Goon A.M., Gupta M.K.: Das Gupta.B.	Fundamentals of Statistics		World Press
Reference Books:			
Rohatgi V. K. and Saleh, A.K. Md. E.	An Introduction to Probability and Statistics	2ndEdn	John Wiley & Sons.
Dudewicz, E. J., and Mishra, S. N.	Modern Mathematical Statistics		John Wiley & Sons.
Bhattacharjee, D. & Das, K. K.	A Treatise on Statistical Inference and Distributions		Asian Books
Hogg, R.V., Tanis, E.A. and Rao J.M	Probability and Statistical Inference	Seventh Ed	Pearson Education

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 5**	**10**	**10**				**60**
B	**1 to 5**			**5**	**3**	**5**	
C	**1 to 5**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:				
Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Name of the Course: B.Sc. in Information Technology (Big Data Analytics) **Subject:** Values and Ethics in Profession			
Course Code: BITBDA305		**Semester: III**	
Duration: 36 Hrs.		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 3 Hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 0		Continuous Assessment:25	
Credit: 3		Practical Sessional internal continuous evaluation:NA	
		Practical Sessional external examination:NA	
Aim:			
Sl. No.			
1.	**To understand the values of ethics in engineering.**		
Objective:			
Sl. No.			
1.	Students will learn key philosophical concepts related to responsible conduct of research.		
2.	Students will develop familiarity with current debates in, and case studies of, ethical issues in non-medical scientific research.		
3.	Students will acquire skills to describe and explain the rationale behind philosophical ethical positions.		
Pre-Requisite:			
Sl. No.			
1	**Knowledge of Analysis**		
Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**HUMAN VALUES** Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.	**6**	**15**
02	**ENGINEERING ETHICS** Senses of „Engineering Ethics" – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg"s theory – Gilligan"s theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories	**8**	**15**
03	**ENGINEERING AS SOCIAL EXPERIMENTATION** Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.	**8**	**15**
04	**SAFETY, RESPONSIBILITIES AND RIGHTS** Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk - Respect for Authority – Collective	**8**	**15**

	Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination		
05	**GLOBAL ISSUES** Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility	**6**	**10**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

List of Books
Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
W. Martin and Roland Schinzinger	Ethics in Engineering		Tata McGraw Hill
Govindarajan M, Natarajan S, Senthil Kumar V. S	Engineering Ethics		Prentice Hall of India
Charles B. Fleddermann	Engineering Ethics		Pearson Prentice Hall
Laura P. Hartman and Joe Desjardins	Business Ethics: Decision Making for Personal Integrity and Social Responsibility		Mc Graw Hill education
Reference Books:			
Charles E. Harris, Michael S. Pritchard and Michael J. Rabins	Engineering Ethics – Concepts and Cases		Cengage Learning
John R Boatright	Ethics and the Conduct of Business		Pearson Education
Edmund G Seebauer and Robert L Barry	Fundamentals of Ethics for Scientists and Engineers		Oxford University Press

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question	Total Marks	No of question	To answer	Marks per question	Total Marks

		to be set		to be set			
A **B** **C**	**1 to 5** **1 to 5** **1 to 5**	**10**	**10**	 **5** **5**	 **3** **3**	 **5** **15**	**60**

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**