Semester-III

Name of the Course: B.Sc. in Information Technology (Artificial Intelligence) **Subject:** Operating System and Operating System Lab			
Course Code: BITAI 301 ,BITAI 391	**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, Process State transitions, Process Control Block (PCB), Context	**8**	**20**

	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,	**3**	**10**

	Disk reliability, Disk formatting, Boot-block, Bad blocks.		
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

Practical:

Course Code:BITAI391

Credit: 2

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

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 (Artificial Intelligence) **Subject:** Database Management System and Database Management System Lab			
Course Code: BITAI 302,BITAI 392		**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**	**6**	**10**

	Indices, B-trees, hashing.		
04	**Transaction processing** Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.	**6**	**10**
05	**Database Security** Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection.	**3**	**5**
06	**Advanced topics** Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.	**3**	**5**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

Practical:

Course Code:BITAI392

Credit: 2

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,	Database System	6th Edition	McGraw-Hill

Henry F. Korth, S. Sudarshan	Concepts		
R. Elmasri and S. Navathe	Fundamentals of Database Systems	5th Edition	Pearson Education
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 6**	**10**	**10**				**60**
B	**1 to 6**			**5**	**3**	**5**	
C	**1 to 6**			**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 (Artificial Intelligence) **Subject:** Data Visualisation and Data Visualisation lab	
Course Code: BITAI 303 & BITAI 393	**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 explore sources and tell stories
2.	to predict sales volumes and identify areas that need attention or improvement
3.	to understand what factors influence customers' behavior to know which products to place where
4.	to discover how to increase revenues or reduce expenses spreadsheets are hard to visualize patterns and trends can be spotted quickly and easily saves time and energy

Objective:	
Sl. No.	
1.	The main objective of data visualization is to understand the significance of data and to communicate this information clearly and efficiently. Analyzing and reasoning about data through visualizations makes complex data more accessible, understandable and usable.

Pre-Requisite:	
Sl. No.	
1.	Computer Programming & Utilization, Graphics

Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Orientation, overview of visualization, graphics, drawing, photorealism, human perception.	**6**	**12**
02	Data, mapping, charts, glyphs, parallel coordinates, stacked graphs, Tufte's design rules, using color	**7**	**20**
03	Graphs, networks, tree maps, Principle Component Analysis, multidimensional scaling, packing	**6**	**10**
04	Visualization systems, Information Visualization Mantra, database visualization, visualization system design.	**6**	**10**

05	Overview and intro to web programming, intro to D3 and selections, D3 chart help.	**3**	**5**
06	Interactive computing, MVC, browsers, event callbacks, interaction design, D3 events, Tooltips, D3 Graphs, D3 transitions, interactive dynamics .	**3**	**5**
07	Narrative structure, narrative layouts, narrative spectrum, Ellipsis.	**3**	**5**
08	Declarative programming, reactive programming, course conclusion .	**2**	**3**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

Practical:

Course Code: BITAI 393

Credit: 2

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

Based on the curriculum as covered by subject teacher.

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
Cole NussbaumerKnaflic	**Storytelling With Data: A Data Visualization Guide for Business Professionals**	**3rd**	**Wiley**
Reference Books:			
Andy Kirk	**Data Visualisation: A Handbook for Data Driven Design**	**2nd**	**SAGE Publications Ltd**
Claus O. Wilke	Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures	**3rd**	**O'Reilly Media, Inc.**

List of equipment/apparatus for laboratory experiments:

Sl. No.	
1.	Computer/Laptop

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

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

		question to be set	Marks	question to be set		question	Marks
A	**1 to 8**	**10**	**10**				**60**
B	**1 to 8**			**5**	**3**	**5**	
C	**1 to 8**			**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 (Artificial Intelligence) **Subject: Probability & Statistics**	
Course Code: BITAI 304	**Semester: 3**
Duration: 36 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.	The aim of this course is to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.
2.	The objective of this course is to familiarize the students with statistical techniques.

Objective: Throughout the course, students will be expected to demonstrate their understanding of probability & statistics by being able to learn each of the following

Sl. No.	
1.	The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
2.	The basic ideas of statistics including measures of central tendency, correlation and regression.
3.	The statistical methods of studying data samples.

Pre-Requisite:

Sl. No.	
1.	Knowledge of basic algebra, calculus.
2.	Ability to learn and solve mathematical model.

Contents		**4 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Definition of Partial Differential Equations, First order partial differential equations, solutions of first order linear PDEs; Solution to homogenous and nonhomogeneous linear partial differential equations of second order by complimentary function and particular integral method. Second-order linear equations and their classification, Initial and boundary conditions, D'Alembert's solution of the wave equation; Duhamel's principle for one dimensional wave equation. Heat diffusion and vibration problems, Separation of variables method to simple problems in Cartesian coordinates. The Laplacian in plane, cylindrical and spherical polar coordinates, solutions with Bessel functions and Legendre functions. One dimensional diffusion equation and its solution by separation of variables.	**12**	**20**
02	Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality. Continuous random variables and their properties, distribution functions and densities, normal, exponential and gamma densities.Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule.	**12**	**25**
03	Basic Statistics, Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression – Rank correlation. Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Test of significance: Large sample test for single proportion, difference of proportions, Tests for single mean, difference of means, and difference of standard deviations. Test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.	**12**	**25**
	Sub Total:	**36**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**40**	**100**

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**

Erwin Kreyszig	Advanced Engineering Mathematics	9 th Edition	John Wiley & Sons
N. G. Das	Statistical Methods	0070083274, 9780070083271	Tata Mc.Graw Hill
Reference Books:			
P. G. Hoel, S. C. Port and C. J. Stone	Introduction to Probability Theory		Universal Book Stall
W. Feller	An Introduction to Probability Theory and its Applications	3rd Ed.	Wiley

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**				
B	**1 to 3**			**5**	**3**	**5**	**60**
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**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Artificial Intelligence) **Subject:** Microprocessor & Microcontroller	
Course Code: BITAI 305	**Semester: III**
Duration: 36 Hrs.	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	End Semester Exam: 70
Tutorial: 1 hr./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 understand the basic 8085, 8086 processor and an 8-bit (8051) controllers, their architecture, internal organization and their functions, interfacing an external device with the processors/ controllers.
Objective:	
Sl. No.	Students are able to
1.	Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
2.	Identify a detailed s/w & h/w structure of the Microprocessor.
3.	Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor.
4.	Distinguish and analyze the properties of Microprocessors & Microcontrollers.
5.	Analyze the data transfer information through serial & parallel ports.
6.	Train their practical knowledge through laboratory experiments.
Pre-Requisite:	
Sl. No.	
1	**Basic knowledge of Digital Electronics, Computer Orgnization.**

Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Introduction to Microcomputer based system. History of evolution of Microprocessor and Microcontrollers and their advantages and disadvantages. Architecture of 8085 Microprocessor, Pin description of 8085. Address/data bus Demultiplexing , Status Signals and the control signals. Instruction set of 8085 microprocessor, Addressing modes, Timing diagram of the instructions (a few examples).	**8**	**16**
02	Assembly language programming with examples, Counter and Time Delays, Stack and Subroutine, Interrupts of 8085 processor(software and hardware), I/O Device Interfacing-I/O Mapped I/O and Memory Mapped I/O , Serial (using SID and SOD pins and RIM, SIM Instructions) and Parallel data transfer.	**9**	**17**
03	The 8086 microprocessor- Architecture, Addressing modes, Interrupts Introduction to 8051 Microcontroller –Architecture, Pin Details. Addressing modes, Instruction set, Examples of Simple Assembly	**10**	**22**

	Language.		
04	Memory interfacing with 8085, 8086. Support IC chips- 8255 ,8251,8237/8257,8259. Interfacing of 8255 PPI with 8085 and Microcontroller 8051. Brief introduction to PIC microcontroller (16F877)	**9**	**15**
	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**
N. Senthil Kumar, M. Saravanan and Jeevananthan	Microprocessors and microcontrollers		Oxford university press
K. Ayala	8051 Microcontroller		Cengage learning
- R.Gaonkar	MICROPROCESSOR architecture, programming and Application with 8085		Penram international Publishing LTD
, Ajit Pal,	Microcontrollers:Principles& Applications		PHI 2011.
Naresh Grover,	Microprocessor comprehensive studies Architecture, Programming and Interfacing"		DhanpatRai, 2003
V. Udayashankara and M.S Mallikarjunaswami	8051 Microprocessor		TMH
S Mathur	Microprocessor 8085 and its Interfacing		PHI

Reference Books:

K Uday Kumar, B .S Umashankar	The 8085 Microprocessor, Architecture, Programming and Interfacing-		(Pearson)
Mazidi, Mazidi and McKinley	The 8051 microcontroller and Embedded systems -		(PEARSON)
N. B. Bahadure	Microprocessors – The 8086/8088, 80186/80386/80486 and the Pentium family –		PHI
Uma Rao and AndhePallavi	The 8051 microcontrollers		(PEARSON).

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

Group	**Unit**	**Objective Questions** (MCQ only with the	**Subjective Questions**

		correct answer)					
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 4**	**10**	**10**				**60**
B	**1 to 4**			**5**	**3**	**5**	
C	**1 to 4**			**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 (Artificial Intelligence) **Subject:** Value & Ethics in Profession			
Course Code: BITAI 306		**Semester: III**	
Duration: 36 Hrs.		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 1 hr./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 0		Continuous Assessment:25	
Credit: 1		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1.	**To understand the ethics in Artificial Intelligence**		
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**	**10**
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	**8**	**15**

	Analysis and Reducing Risk - Respect for Authority – Collective 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**	**15**
	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		McGraw 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 to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 5**	**10**					

B **C**	**1 to 5** **1 to 5**		**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**