

# COURSE STRUCTURE



GLA  
UNIVERSITY  
MATHURA  
Recognised by UGC Under Section 2(f)

Accredited with **A+** Grade by **NAAC**

**12-B Status from UGC**

**Master in Computer Applications  
(MCA)  
[Two Years Programme]**

**Semester I**

### First Semester

S. NO	CODE	SUBJECT	TEACHING SCHEME				CREDITS	CONTACTS HRS/WK
			L	T	P	J		
1.	OMCA 0008	Data Structures	3	1	0	0	4	4
2.	OMCA 0003	Computer Organization	3	0	0	0	3	3
3.	OMCA 0010	Operating Systems	3	0	0	0	3	3
4.	OMCA 0016	Programming in Python	3	0	0	0	3	3
5.	OMCA 0012	Software Engineering	3	0	0	0	3	3
6.	OMCA 0003	English for Professional Purpose-I	2	0	0	0	2	4
7.	OMCA 0006	Ethics & Values	2	0	0	0	2	2
<b>PRACTICALS</b>								
8.	OMCA 0301	Soft Skills-I	0	0	4	0	1	4
9.	OMCA 0806	Data Structures Lab	0	0	4	0	2	4
10.	OMCA 0810	Python Programming Lab	0	0	4	0	2	4
11.	OMCA 0802	Computer Organization Lab	0	0	2	0	1	2
<b>TOTAL</b>			<b>19</b>	<b>1</b>	<b>14</b>	<b>0</b>	<b>26</b>	<b>36</b>

## Semester- I

### OMCA 0008: DATA STRUCTURES

**Objective:** The objective of this course is that students will construct and application of various data structures and abstract data types including lists, stacks, queues, trees and graphs.

Credits: 04

L–T–P–J: 3–1–0–0

Module No.	Content	Teaching Hours
I	<p>Introduction to Data Structure, Types, Data Structure Operations, Algorithm Complexity and Time-Space trade-off.</p> <p><b>Array:</b> Representation of Single and Multidimensional Arrays, Address Calculation, Operations on Arrays, and Application of Arrays: Matrix Multiplication, Sparse Polynomial Representation and Addition, Character String Operation.</p> <p><b>Stacks:</b> Array Representation and Implementation of Stack, Operations on Stacks: Push &amp; Pop.</p> <p><b>Queues:</b> Array Representation and Implementation of Queues, Operations on Queue- Create, Add, Delete, Full and Empty, Types of Queues: Circular Queue, D-Queue and Priority Queue.</p> <p><b>Application of Stack:</b> Conversion of Infix to Prefix and Postfix Expressions, Evaluation of Postfix Expression using Stack.</p> <p><b>Recursion:</b> Recursive Definition and Processes, Recursion in C.</p> <p><b>Linked Lists:</b> Representation and Implementation of Singly Linked Lists, Operations on Linked Lists - Insertion and Deletion to/from Linked Lists, Linked Stacks and Queues, Overflow and Underflow Conditions, Polynomial Representation and Addition and Multiplication of Polynomials, Doubly Linked List, Circular linked list.</p>	19
II	<p><b>Trees:</b> Introduction, Binary Trees and their Representation, Algebraic Expressions, Complete Binary Tree. Extended Binary Trees, Array and Linked Representation of Binary Trees, Traversing Binary Trees, Path Length, Huffman Algorithm.</p> <p><b>Binary Search Trees:</b> Binary Search Tree (BST), Insertion and Deletion in BST.</p> <p><b>Types of Tress:</b> Threaded Binary trees, AVL Trees, Introduction to Multi-way Search trees, B-tree.</p> <p><b>Searching and Hashing:</b> Sequential Search, Binary Search, Comparison and Analysis, Hashing Functions, Hash Tables and Collision Resolution Techniques.</p> <p><b>Sorting:</b> Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Quick Sort, Heap Sort, Radix Sort, Shell Sort.</p> <p><b>Graphs:</b> Terminologies and Representation, Path Matrix, Graph Traversals - DFS and BFS, Shortest Path Problems, Minimum Cost Spanning Trees, Topological Sort.</p>	19

#### Text Book:

- Aaron M. Tanenbaum, YedidyahLangsam and Moshe J. Augenstein , “Data Structures Using C and C++”, 2nd Edition, PHI, 2009.

### Reference Books:

- Horowitz and Sahani, "Fundamentals of Data Structures", 3rd Edition, W H Freeman & Co, 2004-05.
- Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with Applications", 2nd Edition, TMH, 2007.
- R. Kruse, "Data Structures and Program Design in C", 2nd Edition, Pearson Education, 2004.
- Lipschutz Schaum's Outline Series, "Data Structures", 12th Reprint, TMH, 2010.
- G A V Pai, "Data Structures and Algorithms", TMH, 2009.

**Outcome:** After completion of course, student will be able to:

- CO1: Understand the basic concepts of the data structure and algorithms.
- CO2: Understand the complexity representation in terms of Big Oh, Theta and Omega notations.
- CO3: Apply the associated operations in linear data structure like stack, Queue and link list.
- CO4: Apply the associated operations in Binary Search Tree, AVL Tree and M- Way Search Tree.
- CO5: Understand the basic algorithms such as heap sort, graph traversal, quick sort, AVL trees, and hashing.
- CO6: Select the appropriate data structure to solve the problem.
- CO7: Apply the shortest path algorithm to solve real life problem.

**Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs):**

COs	POs/PSOs
C01	PO1/PSO1,PSO2
C02	PO1, PO2/PSO1,PSO2
C03	PO1/PSO1
C04	PO1,PO4/PSO1
C05	PO1,PO4/PSO3
C06	PO2/PSO4
C07	PO2/PSO4

## OMCA 0003: COMPUTER ORGANIZATION

**Objective:** This course aims at introducing the concept of computer organization. In particular, it focuses on basic hardware architectural issues that affect the nature and performance of software.

Credits: 03

L–T–P–J: 3–0–0–0

Module No.	Content	Teaching Hours
I	<p><b>Introduction:</b> Basic organization of the computer and block level description of the functional units, Number representation; fixed and floating-point number representation, IEEE standard for floating point representation., Instruction set, Instruction cycles. Register, bus and memory transfer.</p> <p><b>Central Processing Unit:</b> Addition and subtraction of signed numbers, carry look ahead adders. Multiplication: Signed operand multiplication, Booths algorithm and array multiplier. Processor organization, general registers organization, stack organization and addressing modes. Introduction to Combinational Circuit, Multiplexer, demultiplexer, Decoder, Encoder. Introduction to Sequential Circuit, Flip-Flops, Synchronous and Asynchronous Counters</p> <p><b>Multiprogramming and Multiprocessing:</b> Introduction to pipelined operation.</p>	18
II	<p><b>Control Unit:</b> Instruction types, formats, micro-operations, execution of a complete instruction. Hardwired and micro programmed control: micro programmed sequencing, Microinstruction with next address field, pre-fetching microinstructions, concept of horizontal and vertical microprogramming.</p> <p><b>Memory:</b> Basic concept and hierarchy, RAM memories, ROM memories. Cache memories: concept and design issues, performance, address mapping and replacement. Virtual memory: concept and implementation.</p> <p><b>Input/Output:</b> Peripheral devices, I/O interface, I/O ports, Interrupts: interrupt hardware, types of interrupts and exceptions. Buses, bus architecture, types of buses and bus arbitration. Modes of Data Transfer: Programmed I/O, interrupt initiated I/O and Direct Memory Access., I/O channels and processors. Standard communication interfaces.</p>	18

### Text Books:

- M. Mano, “Computer System Architecture”, 3<sup>rd</sup> Edition, PHI, 1996

### Reference Books:

- D.W. Patterson, “Computer Organization and Design”, 4<sup>th</sup> Edition, Elsevier Publication, 2008.
- William Stalling, “Computer Organization”, 8<sup>th</sup> Edition, PHI, 2011.
- V. Carl Hamacher, Zaky, “Computer Organization”, 4<sup>th</sup> International Edition, TMH, 1996.
- John P Hays, “Computer Organization”, 2<sup>nd</sup> Edition, TMH.
- Tannenbaum, “Structured Computer Organization”, 5<sup>th</sup> Edition, PHI, 2005.
- P Pal Chaudhry, “Computer Organization & Design”, 2<sup>nd</sup> Edition, PHI, 2002.

**Outcome:** After completion of the course, the student will be able to:

- CO1: Understand the basics of digital computer system.
- CO2: Demonstrate the principle of arithmetic operations on unsigned, signed integers and floating point numbers.
- CO3: Understand the concepts of Combinational and Sequential circuits and their applications.
- CO4: Understand the CPU architecture and organization.
- CO5: Explain the basic concepts of pipelining.

- C06: Design the steps for the execution of the complete instruction for hardwired and micro-programmed control unit.
- C07: Explain the function of memory hierarchy.
- C08: Determine the interface of CPU with input/output devices and their modes of transfer.

**Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs):**

<b>COs</b>	<b>POs/PSOs</b>
C01	PO1,PO3/PS01
C02	PO1,PO3/PS01
C03	PO2,PO3,PO5/PS02
C04	PO2,PO3,PO4/PS01,PS03
C05	PO2,PO3,PO4/PS02
C06	PO1,PO2,PO3/PS01,PS03
C07	PO2,PO3,PO5/PS02,PS03
C08	PO3,PO4/PS01

## OMCA 0010: OPERATING SYSTEMS

**Objective:** This course aims to introducing the concept of computer organization. In particular, it focuses on basic hardware architectural issues that affect the nature and performance of software.

**Credits: 03**

**L-T-P-J: 3-0-0-0**

Module No.	Content	Teaching Hours
I	<p><b>Introduction:</b> Operating System and Functions, Classification of Operating Systems- Batch, Interactive, Multiprogramming Time Sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multithreaded Systems, Operating System Structure- Layered Structure, Reentrant Kernels, Monolithic and Microkernel Systems, System Components, Operating System Services.</p> <p><b>Processes:</b> Process Concept, Process States, Process Transition Diagram, Process Control Block (PCB), Principle of Concurrency, Producer/Consumer Problem, Inter Process Communication Models and Schemes, Process Generation, Threads and their Management.</p> <p><b>CPU Scheduling:</b> Scheduling Concepts, Schedulers, Performance Criteria, Scheduling Algorithms, Multiprocessor Scheduling.</p> <p><b>Process Synchronization:</b> Mutual Exclusion, Critical Section Problem, Dekker's Solution, Peterson's Solution, Semaphores, Test and Set Operation, Classical Problem in Concurrency- Dining Philosopher Problem, Readers Writers Problem, Sleeping Barber Problem.</p>	20
II	<p><b>Deadlock:</b> System model, Deadlock Characterization, Prevention, Avoidance and Detection, Recovery from Deadlock, Combined Approach.</p> <p><b>Memory Management:</b> Basic Bare Machine, Resident Monitor, Multiprogramming with Fixed Partitions, Multiprogramming with Variable Partitions, Paging, Segmentation, Paged Segmentation, Virtual memory Concepts, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms, Thrashing, Cache Memory Organization, Locality of Reference.</p> <p><b>I/O Management and Disk Scheduling:</b> I/O Devices, I/O Subsystems, I/O Buffering, Disk Storage and Disk Scheduling, RAID.</p> <p><b>File System:</b> File Concept, File Organization and Access Mechanism, File Directories, and File Sharing, File System Implementation Issues, File System Protection and Security.</p>	20

### Text Books:

- Silberschatz, Galvin and Gagne, "Operating Systems Concepts", 9th Edition, Wiley, 2012.

### Reference Books:

- Sibsankar Halder and Alex a Aravind, "Operating Systems", 6th Edition, Pearson Education, 2009.
- Harvey M Dietel, "An Introduction to Operating System", 2nd Edition, Pearson Education, 2002.
- D M Dhamdhere, "Operating Systems: A Concept Based Approach", 2nd Edition, 2006.
- M. J. Bach, "Design of the Unix Operating System", PHI, 1986.

**Outcome:** After completion of course, the student will be able to:

- CO1: Understand the classification of operating system environment.
- CO2: Understand the basic of process management.
- CO3: Apply the concept of CPU process scheduling for the given scenarios.
- CO4: Describe and analyze the memory management and its allocation policies.



- C05: Illustrate the process synchronization and concurrency process in operating system.
- C06: Analyze the occurrence of deadlock in operating system.
- C07: Understand the concepts of disk scheduling.

**Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs):**

<b>COs</b>	<b>POs/PSOs</b>
C01	P01,P02,P07/PS01
C02	P01,P02 /PS01
C03	P01,P04/PS01,PS03
C04	P03,P04,P06/PS03,PS04
C05	P01,P04/PS01,PS03
C06	P01,P02 /PS01,PS03
C07	P01,P02,P07/PS01,PS03

## OMCA 0016: PROGRAMMING IN PYTHON

**Objective:** This course introduces the solving of mathematical problems using Python programming using OO concepts and its connectivity with database.

Credits: 03

L-T-P-J: 3-0-0-0

Module No.	Content	Lab Hours
I	<p>Introduction to Python: Introduction and Basics; Setting up path Python Data Variables &amp; Operators: Data Variables and its types, id() and type() functions, Coding Standards;</p> <p><b>Control Structures:</b> if-else, elif, Nested if, Iteration Control structures, Break, Continue &amp; Pass;</p> <p><b>String Manipulation:</b> Accessing Strings, Basic Operations, String slices Function and Methods.</p> <p><b>Lists:</b> Introduction, accessing list, Operations, Working with lists, Function and Methods.</p> <p><b>Tuple:</b> Introduction, accessing tuples, Operations, Working, Functions and Methods.</p> <p><b>Dictionaries:</b> Introduction, accessing values in dictionaries, Working with dictionaries, Properties, Functions.</p> <p><b>Functions:</b> Defining &amp; Calling a function, Passing arguments to functions – Mutable &amp; Immutable Data Types, Different types of arguments, Recursion, Scope of variables;</p>	18
II	<p><b>Modules and Packages:</b> User-defined modules and Standard Library: random, numpy, sys, Math Module, String Module, List Module, Date &amp; Time Module, Regular Expressions: match, search, replace;</p> <p>Introduction to PIP, Installing Packages via PIP</p> <p><b>Input-Output:</b> Printing on screen, reading data from keyboard, Opening and closing file, Reading and writing files, Functions.</p> <p><b>Exception Handling:</b> Exception, Exception Handling, Except clause, Try? finally clause, User Defined Exceptions.</p> <p>Introduction to series and data frames &amp; Python using Pandas.</p> <p><b>Object Oriented Programming:</b> Creating Classes, Instance Variables &amp; Access Specifiers, Methods &amp; Complete Python Program, Importance of self, init () method, Instance Methods,</p>	18

### Text Books:

- Paul Barry: "Head First Python "O'Reilly Media, Inc.", 2010.

### Reference Books:

- Bret Slatkin: "Effective Python: 59 Specific ways to write better Python", Addison Wesley, 2015.

**Outcome:** After completion of course, the student will be able to:

- CO1: Understand the basics of Python Programming.
- CO2: Apply the concepts of control structures and string manipulations of python programming.
- CO3: Understand the use of data structures available in PythonList, Tuple and Dictionary.
- CO4: Experiment user-defined functions and access built-in functions.
- CO5: Experiment user-defined modules and access built-in modules- math, random, string, date, time, date time.

- C06: Develop the programs using the concept of File Handling.
- C07: Develop programs based on Exceptional Handling.

**Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs):**

<b>COs</b>	<b>POs/PSOs</b>
C01	PO2/PS04
C02	PO4/PS01
C03	PO5/PS04
C04	PO5,PO7/PS01
C05	PO2,PO8/PS04
C06	PO3,PO10/PS02
C07	PO5,PO9/PS01

## OMCA 0012: SOFTWARE ENGINEERING

**Objective:** Be employed in industry, government, or entrepreneurial endeavors to demonstrate professional advancement through significant technical achievements and expanded leadership responsibility.

Credits: 03

L–T–P–J: 3–0–0–0

Module No.	Content	Teaching Hours
I	<p><b>Introductory Concepts:</b> The evolving role of software – characteristics, components and applications.</p> <p><b>Process Models:</b> Waterfall Model, Prototyping, Incremental, Spiral.</p> <p><b>Agile software Development:</b> Introduction to Agile, Agile software development framework.</p> <p><b>Software Requirement Specification:</b> Requirement Process, SRS Components, Requirement Specifications with Use Cases Diagram.</p> <p><b>Software Project Planning:</b> Project Planning Objectives.</p> <p><b>Software Metrics:</b> Size, Function Point, Staffing, Project Estimation Methods–COCOMO Model.</p> <p><b>Function-Oriented Design:</b> Problem Partitioning, Abstraction, Top Down and Bottom Up Design.</p> <p><b>Module-Level Concepts:</b> Coupling, Cohesion, Design Notation and Specification - Structure Charts; Structured Design Methodology - Data Flow Diagram, Sequence Diagram.</p>	18
II	<p><b>OO Analysis and OO Design:</b> OO Concepts, Introduction to UML Design Patterns: Class Diagram, Activity Diagram, State Chart Diagram.</p> <p><b>Coding:</b> Coding Process, Verification – Code Inspections, Software Metrics.</p> <p><b>Testing Fundamentals:</b> Test Case Design, Black Box Testing Strategies, White Box Testing, Unit Testing, Integration Testing, System Testing.</p> <p><b>Introduction to Automation Testing and Testing Tools:</b> Automated Testing Process, Framework for Automation Testing, Introduction to Automation Testing Tool.</p> <p><b>Software Quality:</b> Models, ISO 9000 Certification for Software Industry, SEI Capability Maturity Model.</p> <p><b>Software Maintenance:</b> Models, Cost of Maintenance, Re-engineering, Reverse Engineering.</p>	19

### Text Books:

- R. S. Pressman, "Software Engineering: A Practitioners Approach", 7th Edition, McGraw Hill, 2010.

### Reference Books:

- K. K. Aggarwal and Yogesh Singh, "Software Engineering", 3rd Edition, New Age International Publishers, 2008.
- Rajib Mall, "Fundamentals of Software Engineering", 3rd Edition, PHI Publication, 2009.
- R.E Fairley, "Software Engineering", McGraw Hill, 2004.
- Sommerville, "Software Engineering", 9th Edition, Pearson Education, 2010.
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**Outcome:** After the completion of the course, the student will be able to:

- CO1: Understand the basic concepts of software engineering.
- CO2: Apply software processes to solve real world problems.
- CO3: Estimate the cost, effort and schedule of software using COCOMO Model.
- CO4: Analyze the software design techniques (structure chart, SDM, sequence diagram).
- CO5: Understand the basic concepts of OO analysis and design.

- C06: Develop the test cases to validate the software.
- C07: Understand the basic models of software Quality and maintenance.

**Mapping of Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs):**

<b>COs</b>	<b>POs/PSOs</b>
C01	P01,P07/PS01
C02	P02,P03/PS04
C03	P02,P011/PS03
C04	P03,P010/PS04
C05	P03,P07/PS01
C06	P05,P012/PS02
C07	P04,P09,P012/PS01



**OMCA 0003: English For Professional Purposes- I**

**Credit: 02**

**L-T-P: 1-2-0**

**Objectives:** *The objectives of the course are as follows:*

- (i) To acquaint the students with different facets of communication;*
- (ii) To enhance the students' awareness about the challenges and strategies of effective communication in various socio-cultural domains;*
- (iii) To develop the writing skills of the students with a focus on formal correspondence including e-mail, report writing etc ;*
- (iv) To boost the students' interpersonal skills through group presentations, skits and role-playing exercises;*
- (v) To equip the students with advanced skills in English grammar with a focus on the identification and correction of common errors.*

**Communication Skills:**

<b>Module No.</b>	<b>Contents</b>	<b>Teaching Hours</b>
<b>I</b>	<p>Importance of English in Communication Communication- Meaning of Communication, Process of Communication, Levels of Communication, Flow of Communication, Turn-taking</p> <p>Planning Presentations Group Presentations (Jointly drafting a presentation, making group-presentations)</p> <p>Paragraph Writing: Methods of Paragraph Development; Accuracy, Brevity and Clarity in Writing; Cohesion &amp; Coherence in Paragraph Writing (Through jumbled sentences/paragraph),</p>	<b>14</b>
<b>II</b>	<p>Coherence Markers as Lexical Bundles, Practice on Short Paragraph Writing</p> <p>E-mail: Formality &amp; Persuasiveness</p> <p>Précis Writing, Summary Writing</p> <p>Report Writing</p> <p>GD</p> <p>Picture Description</p>	<b>14</b>

**Verbal Ability:**

Module No.	Contents	Teaching Hours
<b>I</b>	Error Correction (Based on Tenses and Verb) Passive and Causatives Determiners Question Based Learning: Level I	<b>7</b>
<b>II</b>	Dangling and Misplaced Modifiers Phrase and Clause Error Correction Question Based Learning: Level II	<b>7</b>

### STUDY & DRILL MATERIAL/REFERENCE BOOKS

- V.N.Arora. *Improve Your Writing*, OUP
- M. Ashraf Rizvi. *Effective Technical Communication*, TMH
- *Common Errors in English*. Kiran Prakashan

### EXPECTED OUTCOME OF THE PRESCRIBED SYLLABUS:

The expected outcomes at the completion of the delivery of the course are as follows:

1. The topics dealing with communication aspects will train the students hands on, by enabling them understand/identify and appreciate the barriers to communication, ways to overcome, process & type of communication etc.
2. The students will be able to understand the needs & requirements of the target audience based on their exposure and knowledge of the subject and will be able to communicate accordingly with certain level of accuracy.
3. The writing skills of the students will be enhanced to such an extent that they could easily prepare and manage materials and strategies of formal correspondence themselves.
4. The students will be equipped with interpersonal skills through group presentations, skits and role-playing exercises. The exercises will help in getting rid of stage-fear, nervousness and hesitation during deliveries of official nature.
5. The students will be able to identify and rectify grammatical errors in written communication.

**Focus:** This course focuses on employability and skill development, aligned with all the COs.

### Mapping of Course Outcomes (Cos) with Program Outcomes (Pos)

COs	Pos
CO1	PO2, PO9, PO10, PO11
CO2	PO2, PO9, PO10, PO11
CO3	PO2, PO9, PO10, PO11
CO4	PO2, PO9, PO10, PO11
CO5	PO2, PO9, PO10, PO11

## OMCA 0006: ETHICS AND VALUES

**Objective:** The course aims to develop a logical understanding of morality and society. It aims to develop a critical perspective of the assumptions and prejudices which we use in decision making process. It is to foster the understanding of professional ethics. It is to train students to rationalize the problems of life and profession to learn problem solving and decision making skills. It is to help students in identifying normative commitments of technological knowledge.

**Credits: 02**  
**0**

**L-T-P: 2-0-**

Module No.	Content	Teaching Hours
I	<b>Conceptual Foundations: Foundations of Morality;</b> Professional Ethics; Professional Standards in Engineering Practice; Major Theories of Ethics and Different Ethical Approaches; Normativity of Science and Technology <b>Professions and Moral Dilemmas:</b> Contemporary Ethical Issues; Conflict of Interests; Contracts; Rights and Violations; Consent and Dissent; Privacy and Confidentiality; Consultancy; Allocation of Burdens and Benefits; Direct and Indirect Responsibility; Patents, Piracy and Clones	15
II	<b>Decision Making:</b> Theoretical Bases; Foundational Values; Greater Welfare Approach; Risk-Benefit Analysis; Right-based Approach; Priority Allocation; Binding Grounds of Decisions; Public Norms and Professional Guidelines. <b>Social Responsibility:</b> Individual and Collective Responsibility; Corporate Social Responsibility; Justice and Fairness; Beneficence and Safety; Respect for Humanity, Life, and Nature; Sustainable Development	15

### Text Books:

- Sandel, M. J. (2011). Justice: What's the right thing to do. BUL Rev., 91, 1303.

### Reference Books:

- Singer, P. (Ed.). (2013). A companion to ethics. John Wiley & Sons.
- Skorupski, J. (Ed.). (2010). The Routledge companion to ethics (p. 275). Oxford & New York: Routledge.
- Frey, R. G., & Wellman, C. H. (Eds.). (2008). A companion to applied ethics. John Wiley & Sons.
- Lippert-Rasmussen, K., Brownlee, K., & Coady, D. (Eds.). (2016). A Companion to Applied Philosophy. John Wiley & Sons.

**Outcome:** After completion of the course, the student will be able to:

- CO1: Profound Ethical Decision Making Skills.
- CO2: The enhanced ability to understand the ethical problems of personal, social & professional life.
- CO3: Well-constructed professional approach to rationalize life issues through developed life-skills.
- CO4: Improved Decision Making Ability, Understanding of Professional Ethics & Development of Ethical Attitude.