

PSG11021	Human Values and Professional Ethics	L	T	P	C
Version 1.0	Contact Hours -45	3	0	0	3
Pre-requisites/Exposure	Basic human ethics				
Co-requisites	--				

Course Objectives:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Value based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behaviour and mutually enriching interaction with Nature.
- To explain basic database concepts, applications, data models, schemas and instances.
- To demonstrate the use of constraints and relational algebra operations.
- To describe the basics of SQL and construct queries using SQL.
- To emphasize the importance of normalization in databases.
- To facilitate students in Database design
- To familiarize issues of concurrency control and transaction management.
- To understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling, functions and object oriented approaches.
- Course
- To develop a problem and design the solution for the problem.
- To design and implement efficient algorithms for a specified application.
- To provide the ability to identify and apply the suitable algorithm for the given real world problem

Course Outcomes:

On the successful completion of the course, students will be able to

CO1. Explain the morals, values, ethics, and the law and to explore how they impact professional practice;**CO2.** Develop an increased personal understanding of issues related to ethics.

CO3. Develop an increased personal understanding of issues related the law

CO4. Analyze -making processes.

CO5. Plan practice.

On completion of this course, the students will be able to

CO1. Organize the basic concepts of Database Systems and Applications.

CO2. Construct the basics of SQL and construct queries using SQL in database creationinteraction.

CO3. Define a commercial relational database system (Oracle, MySQL) by writing SQLusing the system.

On the completion of this course the student will be able to

CO1. Define classes, objects, members of a class and the relationships among them needed for afinding the solution to specific problem.

CO2. Illustrate object-oriented modelling techniques like classes and Instances modelling techniques
CO3. Interpret fundamentals of object-oriented programming in Java, including defining

Classes, invoking methods, using class libraries, etc.

CO4. Construct programming solutions with exception handling and multi-threading concept
CO5. Solve GUI program with proper event handling techniques.

On completion of this course, the students will be able to

CO1. Identify the problem given and design the algorithm using various algorithm design techniques.

CO2. Implement various algorithms in a high level language **CO3.** Analyze the performance of various algorithms.

CO4. Compare the performance of different algorithms for same problem.

Course Description:

This course offers an introduction to graph theory, with an emphasis on applications and modelling. Graph theory is a study of graphs, trees and networks. Topics that will be discussed include Euler formula, Hamilton paths, planar graphsand coloring problem; the use of trees in sorting and prefix codes; useful algorithms on networks such as shortest path algorithm, minimal spanning tree algorithm and min-flow max-cut algorithm.

This course introduces the core principles and techniques required in the design and implementation of database systems. This introductory application-oriented course covers the relational database systems RDBMS - the predominant systemfor business scientific and engineering applications at present. It includes Entity-Relational model, Normalization, Relational model, Relational algebra, and data access queries as well as an introduction to SQL. It also covers essential DBMS concepts such as: Transaction Processing, Concurrency Control and Recovery. It also provides students with theoretical knowledge and practical skills in the use of databases and database management systems in information technology applications.

This course investigates object-oriented methods including object-oriented programming methodologies and techniques.Current methodology is emphasized. The use of object-oriented features such as encapsulation, information hiding, inheritance and polymorphism is reinforced by class assignments and programming exercises. The importance of multi-threading and exception handling is introduced in this course.

Algorithmic study is a core part of Computer Science. This study caters to all possible applicable areas of Computer Science. This study includes observation, design, analysis and conclusion. Various types of algorithms have different notion of implementation according to their cost (in terms their time and space complexity). This study also includes refinement of one algorithm as

per the applicability to real problems. Categorization of algorithms according to different method of design also includes in this course. It also compares the same algorithm using different algorithm design methods. For example, Knapsack problem can be solved in Greedy approach and Dynamic approach, both are optimization method. This course enables the students to think analytically while applying, designing an algorithm to solve a specific problem.

Course Content:

Units	Lecture Hours
Unit-I: theories and their applications.	9
Unit-II: Ethics in Engineering Practice and Research: Overview of engineering ethics, Rights and obligations in engineering, The NPSE, IEEE and ECI codes, Violation of codes and their consequences, Conflicts of interest, Whistle blowing, Whistle blowing cases.	9
Unit-III: Sustainable Engineering and Sustainable Development: Meaning of sustainable engineering, Principles of sustainable engineering, Safety and risk assessment, Sustainable development, Sustainable engineering v. engineering negligence.	9
Unit-IV: Engineering Negligence: The elements of engineering negligence, The standard duty of care, Liability in negligence cases, Defenses Negligence Cases (Engineering, medical and others).	9
Unit-V: Rights and obligations of Engineers under Various Indian Laws: The Indian adjudatory system, Constitutional laws governing engineering professionals, Contractual obligations of engineers Environment protection laws, Arbitration and conciliation laws, Intellectual property laws, Information technology laws. Experiment 1: Familiarization of structured query language. Experiment 2: Table Creation. Experiment 3: Insertion, Updation, Deletion of tuples. Experiment 4: Executing different queries based on different functions. Experiment 5: Performing joining operations. Experiment 6: Nested Queries. Experiment 7: Use of aggregate functions. Experiment 8: Use of group functions. Experiment 9: Use of order by functions. Experiment 10: Arithmetic operations. Experiment 11: Trigger using SQL. Experiment 12: Introduction to PL/SQL. Experiment 13: Report generation of various queries. Experiment 14: Merging Data Bases with front end using ODBC connection. Experiment 15: SQL Injection on a non-harmful test page.	9
Unit-I: Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape. Write a Java	09

Units	Lecture Hours
program to illustrate the parameterized constructor. Write a Java program to add two numbers with int and float types using method overloading.	
Unit-II: Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box	09
Unit-III: Write a Java program to list all the files in a directory including the files present in all its subdirectories. Write a Java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (\t). It takes a name or phone number as input and prints the corresponding other value from the hash table (hint: use hash tables).	09
Unit-IV: Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, appear above the buttons in selected color. Initially, there is no message shown. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout. Develop an applet in Java that displays a simple message. Develop an applet in Java that receives an integer in one text field, and computes its factorial Value and returns	09
Unit-V: Write a Java program that simulates a Banking GUI application with facilities of deposit, withdraw and check balance in an account. Write a Java program that implements Quick sort algorithm for sorting a list of names in ascending order Write a Java program that implements Bubble sort algorithm for sorting in descending order and also shows the number of interchanges occurred for the given set of integers. Experiment 1: Implementation based on Divide and Conquer: Binary Search using Divide and Conquer approach, Quick sort and Merge Sort Experiment 2: Implementation based on Dynamic Programming : Implement all pair of Shortest path for a graph (Floyd-Warshall Algorithm), , Bellman Ford Algorithm and Implement Traveling Salesman Problem Experiment 3: Implementation based on Brunch and Bound :Implement 15 Puzzle Problem Experiment 4: Implementation based on Backtracking :Implement 8 Queen problem, Graph Coloring Problem, Hamiltonian Problem Experiment 5: Implementation based on Greedy method: Knapsack Problem and Job sequencing with deadlines, Minimum Cost Spanning Tree by Prim's Algorithm and Minimum Cost Spanning Tree by Kruskal's	09

Units	Lecture Hours
Algorithm Experiment 6: Implementation based on Graph Traversal Algorithm: Implement Breadth First Search (BFS) and Implement Depth First Search (DFS)	

Text Books:

- AroraVibha, AroraKunwar, Laws for Engineers, Central Law Publications, 1st Edition, 2017.2.Fledderman Charles B., Engineering Ethics, Pearson Education Inc., 4th Edition, 2012
- Govindarajan M., Natarajan S., Senthilkumar V. S., Engineering Ethics Includes Human Values, PHI LearningPrivate Limited, 1st Edition, 2010
- Database System Concepts, 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill
- Principles of Database and KnowledgeBase Systems, Vol 1 by J. D. Ullman, Computer Science Press.
- Java Fundamentals - A Comprehensive Introduction, Illustrated Edition ByDaleskrien, Herbert Schildt, Mcgraw-Hill Education.
- Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L RivestAnd Clifford Stein, MIT Press/Mcgraw-Hill.
- 2 Fundamentals of Algorithms E. Horowitz Et Al.

Reference Books:

- Govindarajan M., Natarajan S., Senthilkumar V. S., Professional Ethics and Human Values, PHI LearningPrivate Limited, 1st Edition, 2017.
- Harris Charles E., Jr., Pritchard Michael S., Rabins Michael J., Engineering Ethics, Wadsworth CengageLearning, 4th Edition, 2009
- Fundamentals of Database Systems, 5th Edition by R. Elmasri and S. Navathe, Pearson Education 2.Foundations of Databases, Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley.
- For Programmers, 2nd Edition By Paul Deitel And Harvey Deitel, Pearson Education. nking In Java, Low Price Edition By Bruce Eckel, Pearson Education
- Algorithm Design, 1ST Edition, Jon Kleinberg and EZ vatardos, Pearson.
- Algorithm Design: Foundations, Analysis, And Internet Examples, Second Edition, Michael T Goodrich And Roberto Tamassia, Wiley.
- Algorithms -- A Creative Approach, 3RD Edition, Udimanber, Addison-Wesley, Reading, MA.

Examination Scheme:

Components	Interna l	End Term
Weightage (%)	50	50

Relationship between Course Outcomes (COs) and Program Outcomes (POs):

1 = Weakly Mapped

2 = Moderately Mapped 3 = Strongly Mapped

Year III Semeste r V

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
PSG11	Human	CO1102	2	3	3	1	1	2	3	2	2	-	-	3	1	1	1
021	Values	1.1															
	and	CO1102	1	3	2	3	3	2	2	3	3	-	-	1	2	3	1
	Professi	1.2															
	onal Ethics	CO1102 1.3	3	3	1	2	2	1	3	-	2	-	-	3	2	3	3
		CO1102	1	1	1	2	1	3	3	-	2	-	2	2	3	1	2
		1.4															
		CO1102	1	1	2	1	1	1	2	-	3	-	-	2	1	3	3
		1.5															
		CO1102	1.	2.	1.	1.	1.	1.	2.	2.	2.	-	2.0	2.2	1.8	2.2	2.0
		1	6	2	8	8	6	8	6	5	4						

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
PSG11 021	Human Values and Professional Ethics	CO1102 1.1	2	1	2	1	2	3	2	-	3	-	-	2	3	2	3
PSG11 021	Human Values and Professional Ethics	CO1102 1.2	3	1	2	2	3	3	2	-	1	-	-	2	2	1	2
PSG11 021	Human Values and Professional Ethics	CO1102 1.3	2	3	2	3	1	3	3	-	3	-	-	1	1	2	2
PSG11 021	Human Values and Professional Ethics	CO1102 1	2.33	1.67	2.0	2.0	2.0	3.0	2.33	-	2.33	-	-	1.67	2.0	1.67	2.33

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
PSG11	Human	CO1102	3	2	3	3	1	1	3	-	1	-	-	2	1	2	1
021	Values	1.1															
	and	CO1102	3	2	2	3	3	3	3	-	3	-	-	1	1	1	2
	Professi	1.2															
	onal Ethics	CO1102 1.3	3	3	3	2	3	2	1	-	2	-	-	3	1	2	3
		CO1102	2	3	3	1	1	3	1	-	2	-	-	3	1	1	3
		1.4															
		CO1102	2	2	3	2	2	3	2	-	2	-	-	1	2	3	1
		1.5															
		CO1102	2.	2.	2.	2.	2.	2.	2.	-	2.	-	-	2.0	1.2	1.8	2.0
		1	6	4	8	2	0	4	0		0						

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
PSG11 021	Human Values and Professional Ethics	CO1102 1.1	2	2	2	3	1	1	1	-	3	-	-	1	2	2	2
PSG11 021	Human Values and Professional Ethics	CO1102 1.2	2	3	3	3	2	2	2	-	2	-	-	1	1	2	2
PSG11 021	Human Values and Professional Ethics	CO1102 1.3	2	3	2	3	1	1	2	-	3	-	-	3	3	2	3
PSG11 021	Human Values and Professional Ethics	CO1102 1.4	1	3	3	3	3	1	2	-	2	-	-	1	2	1	3
PSG11 021	Human Values and Professional Ethics	CO1102 1	1.75	2.75	2.5	3.0	1.75	1.25	1.75	-	2.5	-	-	1.5	2.0	1.75	2.5