COURSE HANDBOOK

ON

INTRODUCTION TO COMPUTER PROGRAMMING

(CSE 1001)

(1st Semester)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Faculty of Engineering and Technology,

Institute of Technical Education and Research

SIKSHA 'O' ANUSANDHAN (DEEMED TO BE) UNIVERSITY

Bhubaneswar, Odisha, India

(NOVEMBER 2022)

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PREFACE

This course handbook contains all the necessary details of the concerned subject, i.e., Introduction to Computer Programming (CSE 1001). It is designed in order keep up with the Outcome Based Education **(OBE)**. The handbook provides necessary details about the Grading Pattern, Grading System, Course Assessment, Assessment Rubrics, the Outcomes (POs, PEOs, PSOs), Bloom's Taxonomy, Graduation CGPA requirements, Minimum Requirements for Passing Grade and Appearing the (Deemed to be University) Examination.

1. Course Details

Name of the Course : Introduction to Computer programming

Course Code : CSE 1001

Course Credits : 4

Grading Pattern : 1

Branch and Semester : Computer Science and Engineering, 1st Semester

Name of the Instructor: Mr. K Ankith Kumar

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<table>
<tr><th>SUBJECT CODE</th><th>SUBJECT NAME</th><th>CREDIT</th><th>GRADING PATTERN</th></tr>
<tr><td>CSE 1001</td><td>Introduction to Computer Programming</td><td>4</td><td>1</td></tr>
<tr><td colspan="2" rowspan="2">Fundamentals of object-oriented programming, java evolution, overview of java programming language, constants, variables and data types, operators and expressions, decision making and looping, classes, objects and methods, arrays, strings, and vectors, interfaces, inheritance, packages, multithreading programming, managing errors and exceptions, applet and graphics, managing input output files in java</td><td colspan="2">Text Book:
– Programming with Java by E. Balagurusamy, Mcgraw Hill India</td></tr>
<tr><td colspan="2">Course Format:

3 Classes/Week, 1hr/Class 1Lab/ Week,2hr/Lab, 4 Credits</td></tr>
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2. Course Outcomes (COs) and Mapping Course Outcomes with Program Outcomes (POs)

Course Outcomes		Program Outcomes
CO1	Ability to state and explain the basic Java programming syntax, semantics, and building blocks.	PO1
CO2	Ability to design, write, debug, and test the correctness of programs.	PO2, PO3, PO5
CO3	Ability to develop Java programs using programming constructs like conditional statements, looping, arrays, methods, and class.	PO3, PO5, PO11
CO4	Ability to solve computational problem(s) using programming constructs.	PO2, PO3, PO5
CO5	Ability to identify the problem, and identify a solution plan for the problem.	PO2, PO3
CO6	Ability to analyze the problem, and improve the efficiency of the solution.	PO2, PO3

*Refer Appendix for list of POs

3. Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
CO2	0	3	3	0	2	0	0	0	0	0	0	0	0	0
CO3	0	0	3	0	2	0	0	0	0	0	2	0	0	0
CO4	0	3	3	0	2	0	0	0	0	0	0	0	0	0
CO5	0	3	3	0	0	0	0	0	0	0	0	0	0	0
CO6	0	3	3	0	0	0	0	0	0	0	0	0	0	0

*0: No correlation, 1: Slight (Low), 2: Moderate, 3: Substantial (High)

*Refer Appendix for list of POs

4. Justifications of Mapping

Course Outcome	Program Outcomes Satisfied	Outcome Element Satisfied	Justification of Satisfaction
CO1	PO1	Knowledge of Mathematics	Students shall be able to formulate the mathematical model, logic and algorithm before writing the Java program by applying the knowledge of mathematics.
CO2	PO2	Analyse Engineering Problems	Students shall be able to find the correct output of the program after testing debugging with different test cases
	PO3	Design solutions for engineering problems	Students shall be able to develop simple java applications by knowing the basic building blocks and programming constructs like control structures, functions, and strings.
	PO5	Use modern engineering and IT tools	Students shall be able to use widely-used IDE like Eclipse IDE for developing Java applications. They can acquire the project construction skill by the help of these tools.
CO3	PO3	Design solutions for engineering problems	Students shall be able to find the correct output of the program after testing debugging with different test cases
	PO5	Use modern engineering and IT tools	Students shall be able to use widely-used IDE like Eclipse IDE for developing Java applications. They can acquire the project construction skill by the help of these tools.
	PO11	Project management and finance	Student shall able to work in a team and should learn how to manage project in real life.

CO4	PO2	Analyse Engineering Problems	Students shall able to identify, formulate and analyse the problems.
	PO3	Design solutions for engineering problems	Students shall be able to develop Java programs by knowing different programming construct.
	PO5	Use modern engineering and IT tools	Students shall be able to use widely-used IDE like Eclipse IDE for developing Java applications. They can acquire the project construction skill by the help of these tools.
CO5	PO2	Analyse Engineering Problems	Students shall able to identify, formulate and analyse the problems.
	PO3	Design solutions for engineering problems	Students shall be able to develop real-life applications using Java by knowing object-oriented programming concepts, modular approaches, files and exceptions.
CO6	PO2	Analyse Engineering Problems	Students shall able to identify and analyse the real-life problems
	PO3	Design solutions for engineering problems	Students shall be able to develop real-life applications using java and try to improve efficiency of the application by applying advance technique.

5. Grading Pattern and Components of Evaluation

The Subject, Introduction to computer Programming (CSE 1001), has 4 Credits, and belongs to Grading Pattern 1. The **First Grading Pattern** will be for those Subjects which are of 4 credits and which combinations of theory and laboratory components are. The breakdown required for the calculation of the Numeric Score (out of 100) for Grading Pattern 1 is given below.

ATTENDANCE	5
MAJOR LAB / SESSION ASSIGNMENTS / QUIZZES	10

MINOR ASSIGNMENTS	10
MID TERM	15
TOTAL INTERNAL	40

IN LAB EXAM	15
THEORY EXAM	45
TOTAL EXTERNAL	60

6. Tentative Lesson Plan

Lecture/Lab #	Tasks	Mapping with COs
Lecture #1	Course hand Book Discussion	**All COs, POs, PSOs**
Lecture # 2	Introduction to the course, Evaluation procedure, Fundamentals of Object-oriented programming	**CO1**
Lecture # 3	Java Evolution	**CO1**
Lab # 1	EXPERIMENT 1: Overview of java programming and problem solving (Introduction to Eclipse IDE, Structure of a java Program, Edit-Compile-Execute)	**CO1**
Lecture # 4	Overview of java programming language, Java Tokens	**CO1**
Lecture # 5	Constants, Variables and Data Types	**CO1**
Lecture # 6	Constants, Variables and Data Types (Continued)	**CO1**
Lab # 2	EXPERIMENT 2: Assignment based on elements of Java	**CO1,**
Lecture # 6	Constants, Variables and Data Types (Continued)	**CO1,**
Lecture # 7	Operators and Expressions	**CO1**
Lecture # 8	Operators and Expressions (Continued)	**CO1**
Lab # 3	EXPERIMENT 3 : (Elements of Programming) Command Line Arguments and Keyboard Input	**CO1**
Lecture # 9	Operators and Expressions (Continued)	**CO1**

Lecture # 10	Introduction to Decision Making and Branching, Control Flow Diagram, Pseudo Code, if statement, if else statement	**CO2**
Lecture # 11	Conditional Statements (Continued), if statement, Two- way if else statement with examples	**CO2**
Lab # 4	EXPERIMENT 4: Assignments based on Conditional Statements	**CO2**
Lecture # 12	Conditional Statements (Continued), if-else-if ladder with examples, Common errors and Pitfalls	**CO2**
Lecture # 13	Conditional Statements (Continued), Nested if and multi-way if statement, switch-case statement with examples	**CO2**
Lecture # 14	Introduction to looping: Motivation, Loop with single counter, Loop Syntax in java with examples (while,do- while, for)	**CO2**
Lab # 5	EXPERIMENT 5: Assignments based on Conditional Statements	**CO3**
Lecture # 15	Loop with two counters, Loop with complex conditional expression, Nested Loop with examples	**CO2**
Lecture # 16	Which loop to Use? break and continue, Problem solving using Loop	**CO3**
Lecture # 17	Problem solving using Loop	**CO3**
Lab # 6	EXPERIMENT 6: Assignments based on Iterative Statements/Looping	**CO4**
Lecture # 18	Introduction to Classes, Objects, and Methods	**CO4**
Lecture # 19	Introduction to Inheritance, Extending a class, Types of Inheritance, Super class and sub class	**CO4**
Lecture # 20	Visibility control, Dynamic method dispatch, Finalize class and methods	**CO3**
Lab # 7	EXPERIMENT 7: Assignments based on Iterative Statements/Looping	**CO3**
Lecture #21	Problem solving on Inheritance	**CO3**
Lecture # 22	Introduction to Array: Motivation, Declaration, Creation and Initialization of an Array	**CO5**

Lecture # 23	Array (Continued) (Discussion of various examples)	**CO4, CO5**
Lab # 8	EXPERIMENT 8: Assignment based on Methods	**CO2, CO3**
Lecture #24	Array (Continued) (Insertion, Deletion operations)	**CO4, CO5**
Lecture # 25	Introduction to Two-dimensional array: Declaration, Creation and Initialization of an Array	**CO2, CO4**
Lecture # 26	Two-dimensional Array (Continued) (Discussion of various examples)	**CO5**
Lab # 9	EXPERIMENT 9: Assignment based on Single Dimensional Arrays	**CO5**
Lecture #27	Two dimensional Array (Continued) (Discussion of various examples)	**CO5**
Lecture # 28	Introduction to Strings: Declaration and initialization, String arrays, String methods	**CO5**
Lecture # 29	String Buffer class, problem solving on strings	**CO5**
Lab # 10	EXPERIMENT 10: Assignment based on Multi-Dimensional Arrays	**CO5**
Lecture # 30	Introduction to Vectors: Declaration and Initialization Vectors methods.	**CO5**
Lecture # 31	Wrapper class,Auto boxing and Unboxing, Enumerated type and Annotations	**CO5**
Lecture # 32	Introduction to Abstract class and Interface: Motivation, Defining Interface and abstract class	**CO5**
Lab # 11	EXPERIMENT 11: Assignment based on class and objects	**CO6**
Lecture # 33	Multiple Inheritance, Extending Interface, Accessing Interface variables.	**CO5**
Lecture # 34	Introduction to packages: Java packages, System pack- ages, naming convention, creating package and accessing packages	**CO6**
Lecture # 35	Introduction to Multi-threaded programming: Creating threads, stopping and blocking threads	**CO6**

Lab # 12	EXPERIMENT 12: Assignment based on Object Oriented Concepts	**CO6**
Lecture # 36	Thread Life cycle, synchronization, Problem solving on threads	**CO6**
Lecture # 37	Managing errors and Exceptions: Different types of errors, Exceptions	**CO6**
Lecture # 38	Try, Catch and finally, Multiple catch statement, Throwing exceptions	**CO6**
Lab # 13	EXPERIMENT 13: Assignment based on Exception Handling	**CO6**
Lecture # 39	Problem solving on Exception Handling	**CO6**
Lecture # 40	Introduction to Applet: Applet life cycle, creating and running applet, HTML tags	**CO6**
Lecture # 41	Applet life cycle, creating and running applet, HTML tags (Continued)	

7. Assessment Rubric for the Course

Method: Assignments, Lab Report and Mid-Semester and End-Semester Exam

Outcomes Assessed:

PO1 – Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 – Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 – Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO5 – Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO11- Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a memberand leader in a team, to manage projects and in multidisciplinary environments.

PSO1- Graduates of Computer Science and Engineering will achieve excellence in product design, thermal engineering and manufacturing system, innovation and entrepreneurship by acquiringknowledge in mathematics, science and designing principles.

PSO2- Graduates will be able to design an experiment as well as to analyse, interpret and provide solutions to the real-life Computer Science and engineering problems.

Mid-Semester and End-Semester Examination Rubrics			
Performance	**High (2 Marks)**	**Medium (1-1.5 Marks)**	**Low (0.5 Marks)**
Theoretical representation of concepts	Properly able to define, represent, and interpret the physical significance.	Minor errors in definition, representation and interpretation of physical significance.	Incomplete or poor definition, representation and interpretation of physical significance.
Pictorial representation of ideas	Neat, clean and proper sketches, graphs with proper labelling and interpretation.	Sketches and Graphs are drawn but interpretation of significance is not done or labelling is missing.	The pictures are unclear/not labelled and the interpretation is inappropriate.
Solving mathematical and/or design problems and interpreting the results	Selection of appropriate concepts to formulate. Ability to solve problems, represent them pictorially and interpret the results.	Able to select correct concepts, formulate, represent and solve, but error in interpreting	Erroneous selection of concepts, able to represent and formulate only, but error in solving.

Rubrics for Lab Component

Performance	High (9-10 Marks)	Medium (7-8 Marks)	Low (4-6 Marks)
Lab Experiments and Report	Student demonstrates an accurate understanding of the lab objectives and concepts. Questions are answered completely and correctly. Graphs are neat, creative and include complete titles and accurate units. Errors, if any, are minimal.	Student has a basic knowledge of content, but may lack some understanding of the same concepts. Questions are answered fairly well and/or graphs could have been done more neatly, accurately or with more complete information.	Student has problems with both the graphs and the answers. Student appears to have not fully grasped the lab content, and the graphs(s) possess multiple errors. Student turns in lab report late or the report is so incomplete and/or so inaccurate that it is unacceptable.
Lab Participation and Presentation	Student demonstrates an accurate understanding of the lab objectives and concepts. The student can correctly answer questions and if appropriate, can explain concepts to fellow classmates. Student is eager to participate and assist when needed. The student has attended all labs.	Student arrives on time to lab, but maybe unprepared. Answers to questions are basic and superficial suggesting that concepts are not fully grasped. The student has missed few (2-3) lab classes.	The unpreparedness of student makes it impossible to fully participate. If able to participate, student has difficulty explaining key lab concepts. The student has missed many (5-6) lab classes.
Viva-voice	The student is able to answer all the asked questions pleasingly, and explains all the concepts reasonably well, and in details.	Is able to answer some of the asked questions satisfactorily, and explains the concepts well.	The student doesn't understand the concepts and hence answers the questions but the logic or is concept explanation provided is improper.

Rubrics for Quiz

Performance	High (9-10 Marks)	Medium (7-8 Marks)	Low (4-6 Marks)
Short/Long Answer Type Questions	The student has answered all the questions correctly and depicted them in a neat and clean manner, with appropriate explanation.	The student has answered most of the questions correctly and depicted them in a satisfactory manner.	The student has answered some of the questions correctly, though, with improper /erroneous/ incomplete justification of the same.
MCQ Type Questions	The student has attended all the quizzes and attempted all the questions correctly.	The student has attended most of the quizzes and attempted most of the questions correctly.	The student has attended some of the quizzes and answers few of the questions correctly.

Rubrics for Assignments			
Performance	**High (9-10 Marks)**	**Medium (7-8 Marks)**	**Low (4-6 Marks)**
Completion and Submission of Assignments	Completed and submitted all assignments within deadline. The answers are depicted correctly, completely and in a neat and clean manner. The answers maybe unique/innovative.	Completed and submitted above 80% of the assignments. Submission is by the due date. The answers were fairly represented.	Completed 60% of the assignments. The submissions were made after repeated reminders, and in the extended deadline period. The answers were fairly represented.

Rubrics for Mini Project			
Performance	**High (9-10 Marks)**	**Medium (7-8 Marks)**	**Low (4-6 Marks)**
Articulate problem statements and identify objectives	Problem statement is clear and objectives are completely defined.	Problem statement is clear and objectives are not in line with problem statement.	Problem statement and objectives are not clear.
Identify engineering systems, variables, and parameters to solve the problems	Engineering systems are identified. Variables, and parameters to solve the problems are completely defined .	Engineering systems are clear. Variables, and parameters to solve the problems are not defined.	Engineering systems are identified but not clear. Variables, and parameters to solve the problems are not defined
Apply formal idea generation tools to develop multiple engineering design solutions	Able to generate engineering designs with justification.	Able to use the tool but not able to generate engineering designs.	Able to identify but not able to use it effectively.
Build models/ prototypes to develop diverse set of design solutions	Able to generate and justify the best solution.	Able to use the tool but not able to generate alternatives.	Able to choose the tool but not able to use it effectively.
Generate information through appropriate tests to improve or revise design	Able to apply information for the improvement.	Able to follow testing procedures but not able to collect information.	Able to identify but not able to follow testing procedure.
Analyze data for trends and correlations, stating possible errors and limitations	Able to identify errors and limitations.	Able to analyze data but not able to correlate them.	Able to understand but not able to analyze data.
Present results as a team, with smooth integration of contributions from all individual efforts.	Contribution from an individual to a team is good and results in an integrated team presentation.	Contributions from an individual to a team is moderate.	Contributions from an individual to a team is minimal.

Note – For specific assessments, specific rubrics may be followed.

8. Course Related Surveys

Pre-requisite Survey: The objective of this survey is to know the basic understanding and different skills relevant to the subject, i.e., Introduction to Computer Programming (CSE 1001). Please respond to the questions by clicking any one of the options against each of the following questions.

1. Ability to apply theoretical knowledge in day-to-day life (PO3, PO7).

(a) Low Understanding (b) Medium (c) Adequate/High

2. Multidisciplinary skills and ability to work in a team (PO11).

(a) Low Understanding (b) Medium (c) Adequate/High

3. Communication and project management skills (PO10, PO11).

(a) Low Understanding (b) Medium (c) Adequate/High

4. Ability to solve numerical and to plot graphs (PO1, PO2).

(a) Low Understanding (b) Medium (c) Adequate/High

5. CAD/Simulation skills (PO5).

(a) Low Understanding (b) Medium (c) Adequate/High

6. Basic knowledge about the laws of thermodynamics (PO1).

(a) Low Understanding (b) Medium (c) Adequate/High

7. Understanding of principles of heat, work and energy (PO1).

(a) Low Understanding (b) Medium (c) Adequate/High

8. Knowledge of thermodynamics processes (PO1).

(a) Low Understanding (b) Medium (c) Adequate/High

9. Understanding of basics of heat engine and heat pump (PO1).

(a) Low Understanding (b) Medium (c) Adequate/High

10. Knowledge about the principles of power cycles and refrigeration cycles (PO1).

(a) Low Understanding (b) Medium (c) Adequate/High

Interim Course Progress Survey: The objective of this survey is to know the students' progress in basic understanding and attaining different outcomes relevant to the subject, i.e., Introduction to Computer Programming (CSE 1001). Please respond to the questions by

clicking any one of the options against each of the following questions. The outputs will be shared with the respective Faculty Advisors for further necessary actions.

Course End Survey: The objective of this survey is to know the attainment of the outcomes relevant to the subject, i.e., Introduction to Computer Programming (CSE 1001). Please respond to the questions by clicking any one of the options against each of the following questions.

APPENDIX I – VISION

The Siksha 'O' Anusandhan will be a leading institution of higher learning in its chosen areas of concentration, preparing future generations through quality teaching and innovative research and will emerge as a comprehensive and socially inclusive University in the country for professional advancements in related disciplines.

APPENDIX II – MISSION

- Educate students to become responsible, enlightened, and productive citizens;
- Conduct scholarship and promote entrepreneurship that improve the human condition;
- Serve business, education, government, health care systems, and community; and
- Enhance the cultural environment of the region.

APPENDIX III – PROGRAM EDUCATIONAL OBJECTIVES (PEO)

1	Our Graduates will have successful professional careers in industry, government, academia or non-profit organisations.

2	Our Graduates will effectively lead, work and communicate in multidisciplinary teams and apply sound engineering principles and design methodology to solve societal problems.
3	Our Graduates will maintain currency in their chosen field through higher study, through organizational participation and through participation in professional developmental activities.

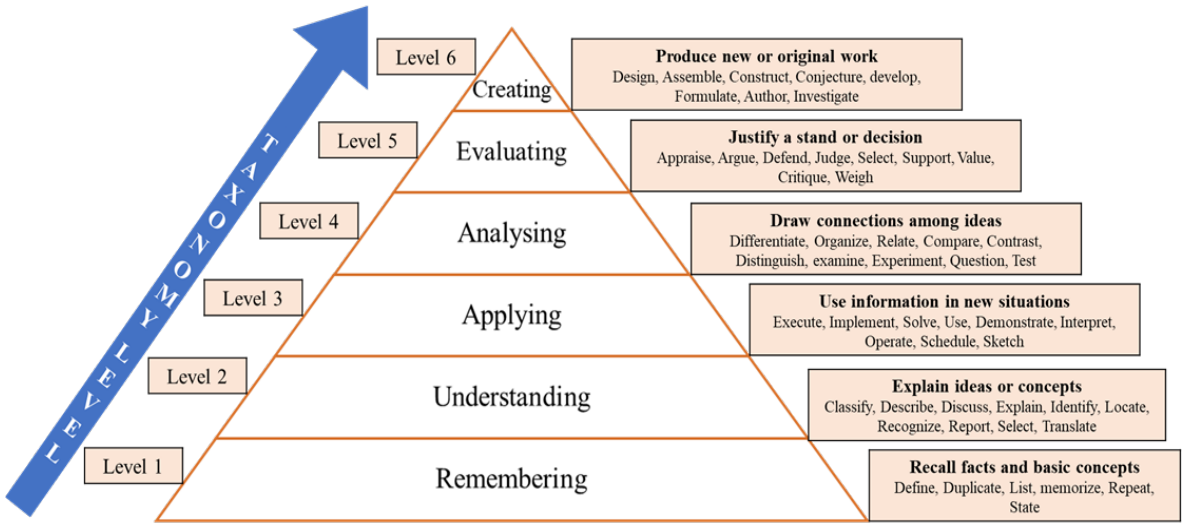
APPENDIX IV – PROGRAM SPECIFIC OUTCOMES (PSO)	
PSO1	Graduates of Computer Science and Engineering will achieve excellence in product design, thermal engineering and manufacturing system, innovation and entrepreneurship by acquiringknowledge in mathematics, science and designing principles
PSO2	Graduates will be able to design an experiment as well as to analyse, interpret and provide solutions to the real-life Computer Science and engineering problems.

APPENDIX V – PROGRAM OUTCOMES (PO)	
POs	**Description**

PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilitiesrelevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, andneed for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and giveand receive clear instructions.

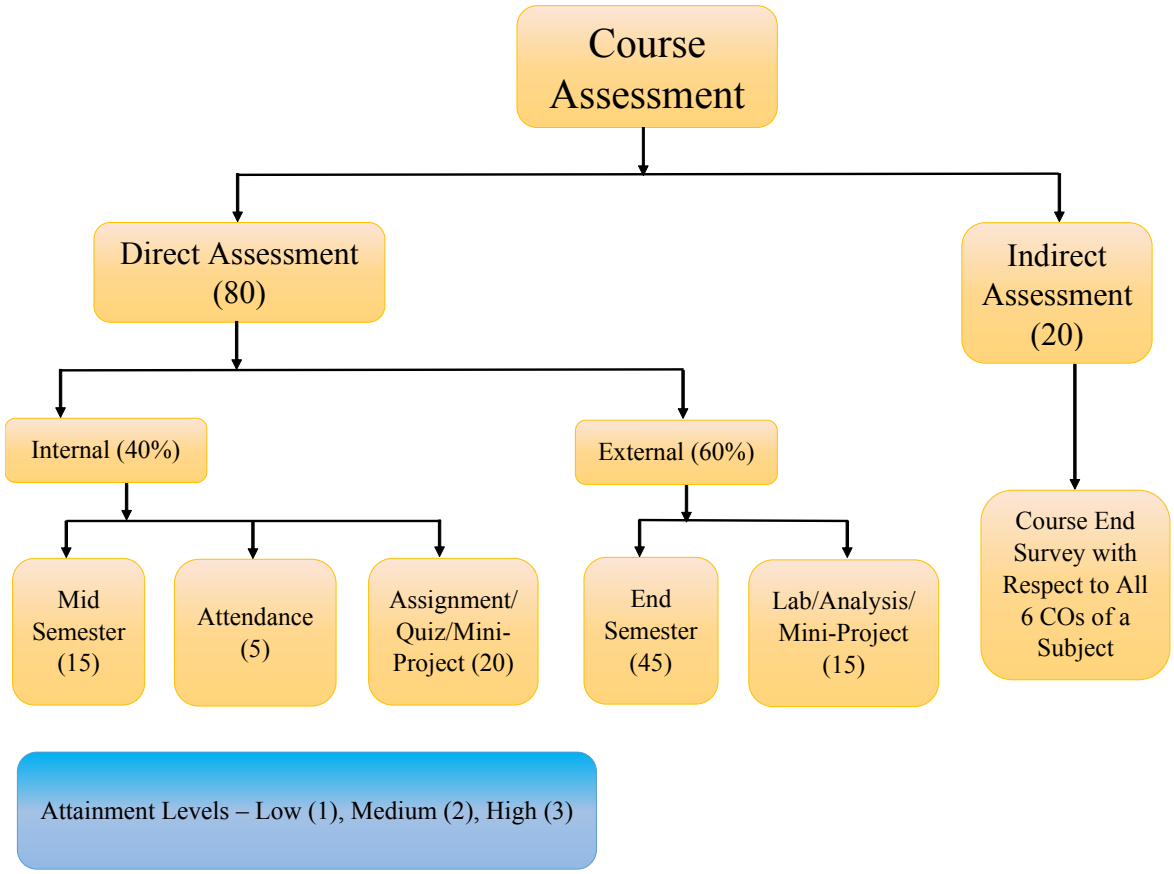
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

APPENDIX VI – BLOOM'S TAXONOMY

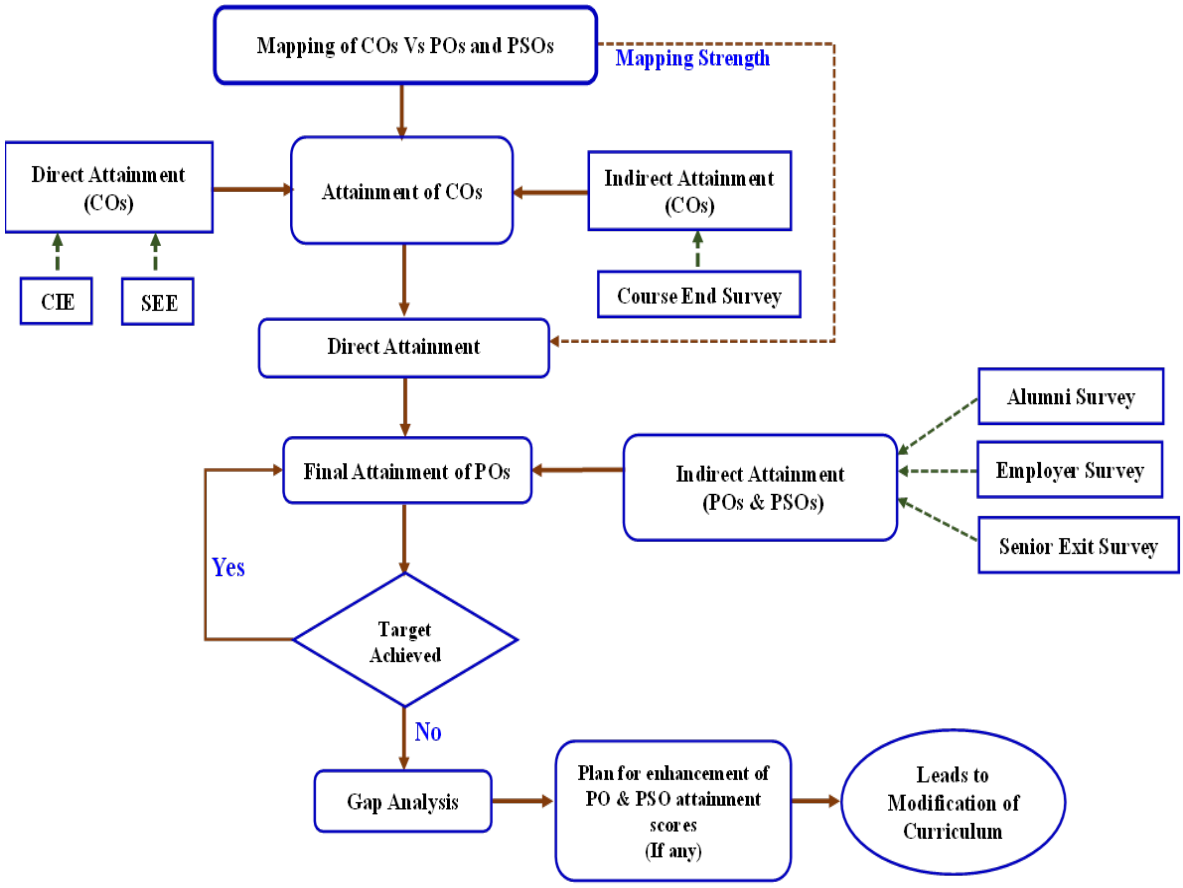


In this subject, Levels 1–4 of Bloom's Taxonomy, i.e., Remembering–Analysing are covered.

APPENDIX VII – COURSE ASSESSMENT (FOR GRADING PATTERN 1)



APPENDIX VIII – ATTAINMENT OF COs, POs, & PSOs



APPENDIX IX – GRADING SYSTEM

Performance	Letter grade	Grade Point Per Credit
Outstanding	O	10
Accomplished	A	9.5
Impressive	B	8.5
Encouraging	C	7.5
Acceptable	D	6.5
Must do better	E	5.5
Fail	F	0

PERCENTAGE EQUIVALENCE CONVERSION FOR CGPA:

Percentage of Marks = CGPA Multiplied by 10

APPENDIX X – 9.1.2 RELATIVE GRADING

LETTER GRADE	STUDENTS RANGE	GRADE POINT
O	Top 5%	10
A	Next 10%	9.5
B	Next 20%	8.5
C	Next 30%	7.5
D	Next 20%	6.5
E	Remaining Students having Numeric Score >= 40	5.5
F	Numeric Score < 40	0

The minimum possible cutoff used for “E” grade is 40 (Internal + External), i.e., if the marks obtained are less than 40 (Internal + External) then the student won't be given an "E" grade (or above) in a particular instance of the Subject irrespective of value of cutoff for “E” grade.

The Relative Grading System will only be applicable for those subjects which follow Grading Patterns 1, 2, and 6. For Relative grading to be applicable, the number of students in the

subject will need to be at least 12. Absolute Grading will be applicable otherwise.

APPENDIX XI – 10. GRADUATION CGPA REQUIREMENTS

The Minimum Cumulative Grade Point Average required for Graduation is **6.0**, i.e., a student can only be considered for graduation if and only if his/her Cumulative Grade Point Average (after complying with all the requirements of the (Deemed to be University) and the Constituent College required for graduation) is **greater than or equal to 6.0 (six point zero)**.

APPENDIX XII – 12. MINIMUM REQUIREMENTS FOR A PASSING GRADE

The Minimum Attendance and Numeric Score Requirements for a passing grade at Institute of Technical Education and Research (ITER), Siksha 'O' Anusandhan (Deemed to be University) which will be followed from admission year 2018-2019.

NUMERIC SCORE REQUIREMENTS	
INTERNAL	16
EXTERNAL	24
TOTAL	40

ATTENDANCE REQUIREMENTS	
ATTENDANCE	75%

APPENDIX XIII – 15. APPEARING THE (DEEMED TO BE UNIVERSITY) EXAM

The Minimum Numeric Score and Attendance Requirements for appearing the External Exam of a subject are as mentioned below.

NUMERIC SCORE REQUIREMENTS (For External Exam)	
INTERNAL COMPONENT	16

ATTENDANCE REQUIREMENTS (For External Exam)	
ATTENDANCE	75%