



ESTD : 2007

# Sri Indu Institute of Engineering and Technology (Autonomous)

(Formerly RVR Institute of Engineering & Technology )

**An Autonomous Institution Under UGC**

NAAC Accredited. Recognized Under 2(f) of UGC Act 1956

EAMCET CODE: INDI

Approved by AICTE, New Delhi, & Affiliated to JNTUH, Hyderabad.

JNTUH CODE: X3



## COURSE FILE

ON

## PROGRAMMING FOR PROBLEM SOLVING LAB

**Course Code-CS107ES**

**I B.Tech I Semester-  
A.Y.2022-2023**

Prepared by

**G.KALYANI**

**Asst.Professor**

Head of the Department  
Department of H&S  
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<b>Name of the Physical laboratory:</b>	PROGRAMING FOR PROBLEM SOLVING LAB
<b>Course Code:</b>	CS107ES
<b>Room No:</b>	D007&XII
<b>Name of the lab incharge</b>	U.NARESH
<b>Name of the faculty incharge</b>	G.KALYANI

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## INSTITUTE VISION & MISSION

### Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

### Mission:

- **IM1:** To offer outcome-based Education and enhancement of technical and practical skills.
- **IM2:** To Continuous assess of teaching-learning process through institute-industry collaboration.
- **IM3:** To be a center of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.
- **IM4:** To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

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# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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KhalsaIbrahimpatnam,Sheriguda(V),Ibrahimpatnam(M),RangaReddyDist.,Telangana-501510

Website:<https://siiet.ac.in/>

## PROGRAMME OUTCOMES

**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, research literature, and analyze complex engineering problem searching 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 & Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment & Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual & Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary 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, give and receive clear instructions.

**PO11: Project Management & 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 multi disciplinary 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.

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# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

## B.Tech in COMPUTER SCIENCE AND ENGINEERING (IOT)

### COURSE STRUCTURE

#### I YEAR SYLLABUS (BR22 Regulations)

Applicable from Academic Year :2022-23Batch

#### I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA101BS	Matrices and Calculus	3	1	0	4
2.	AP102BS	Applied Physics	3	1	0	4
3.	CS103ES	Programming for Problem Solving	3	0	0	3
4.	ME102ES	Engineering Workshop	0	1	3	2.5
5.	EN104HS	English for Skill Enhancement	2	0	0	2
6.	CS106ES	Elements of Computer Science & Engineering	0	0	2	1
7.	AP105BS	Applied Physics Laboratory	0	0	3	1.5
8.	CS107ES	Programming for Problem Solving Laboratory	0	0	2	1
9.	EN107HS	English Language and Communication Skills Laboratory	0	0	2	1
10.	*MC101ES	Environmental Science	3	0	0	0
11.		Induction Programme				
		<b>Total</b>	<b>14</b>	<b>3</b>	<b>12</b>	<b>20</b>

#### I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2.	CH203BS	Engineering Chemistry	3	1	0	4
3.	ME201ES	Computer Aided Engineering Graphics	1	0	4	3
4.	EE201ES	Basic Electrical Engineering	2	0	0	2
5.	EC201ES	Electronic Devices and Circuits	2	0	0	2
6.	CH206BS	Engineering Chemistry Laboratory	0	0	2	1
7.	EE202ES	Basic Electrical Engineering Laboratory	0	0	2	1
8.	CS201ES	Python Programming Laboratory	0	1	2	2
9.	CS203ES	IT Workshop	0	0	2	1
		<b>Total</b>	<b>11</b>	<b>3</b>	<b>12</b>	<b>20</b>



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## PROGRAMMING FOR PROBLEM SOLVING LABORATORY

(Course Code: CS107ES)

B.Tech I Year I Sem.

L T P C

0 0 2 1

**Prerequisites:** Programming for Problem Solving

### Course Objectives:

The students will learn the following:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
- To write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

**Course Outcomes:** The candidate is expected to be able to:

- Formulate the algorithms for simple problems
- Translate given algorithms to a working and correct program
- Correct syntax errors as reported by the compilers
- Identify and correct logical errors encountered during execution
- Represent and manipulate data with arrays, strings and structures Use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

### Practice sessions:

- Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
- Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.

### Simple Numeric Problems:

- Write a program for finding the max and min from the three numbers.
- Write the program for the simple, compound interest.
- Write a program that declares Class awarded for a given percentage of marks, where mark <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.
- Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the output should be:

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

e. Write a program that shows the binary equivalent of a given positive number between 0 to 255.

### **Expression Evaluation:**

a. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula  $s = ut + \frac{1}{2} at^2$  where  $u$  and  $a$  are the initial velocity in m/sec ( $= 0$ ) and acceleration in  $\text{m/sec}^2$  ( $= 9.8 \text{ m/s}^2$ )).

b. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators  $+$ ,  $-$ ,  $*$ ,  $/$ ,  $\%$  and use Switch Statement)

c. Write a program that finds if a given number is a prime number

d. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first  $n$  terms of the sequence.

f. Write a C program to generate all the prime numbers between 1 and  $n$ , where  $n$  is a value supplied by the user.

g. Write a C program to find the roots of a Quadratic equation.

h. Write a C program to calculate the following, where  $x$  is a fractional value.  $1 - \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{6}$

i. Write a C program to read in two numbers,  $x$  and  $n$ , and then compute the sum of this Geometric progression:  $1 + x + x^2 + x^3 + \dots + x^n$ . For example: if  $n$  is 3 and  $x$  is 5, then The program computes  $1 + 5 + 25 + 125$ .

### **Arrays, Pointers and Functions:**

a. Write a C program to find the minimum, maximum and average in an array of integers.

b. Write a function to compute mean, variance, Standard Deviation, sorting of  $n$  elements in a single dimension array.

c. Write a C program that uses functions to perform the following:

i. Addition of Two Matrices

ii. Multiplication of Two Matrices

d. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be the same.

e. Write C programs that use both recursive and non-recursive functions To find the factorial of a given integer.

f. To find the GCD (greatest common divisor) of two given integers.

g. To find  $x^n$

i. Write a program for reading elements using a pointer into an array and display the values using the array.

j. Write a program for display values reverse order from an array using a pointer.

k. Write a program through a pointer variable to sum of  $n$  elements from an array.

### **Files:**

a. Write a C program to display the contents of a file to standard output device.

b. Write a C program which copies one file to another, replacing all lower case characters with their uppercase equivalents.

c. Write a C program to count the number of times a character occurs in a text file. The filename and the character are supplied as command line arguments.

d. Write a C program that does the following:

It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint: convert the strings using a to i function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function)

The program should then read all 10 values and print them back.

e. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).

Strings:

a. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.

b. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent

c. Write a C program that uses functions to perform the following operations:

d. To insert a sub-string into a given main string from a given position.

e. To delete n Characters from a given position in a given string.

f. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)

g. Write a C program that displays the position of a character ch in the string S or -1 if S doesn't contain ch.

h. Write a C program to count the lines, words and characters in a given text.

Miscellaneous:

a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.

b. Write a C program to construct a pyramid of numbers as follows:

```
1      *          1          1          *
1 2    **        2 3        2 2        **
1 2 3  ***       4 5 6       3 3 3       ***
                                   4 4 4       **
                                           *
```

Sorting and Searching:

a. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.

b. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.

c. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.

d. Write a C program that sorts the given array of integers using selection sort in descending order

e. Write a C program that sorts the given array of integers using insertion sort in ascending order

f. Write a C program that sorts a given array of names.



**TEXTBOOKS:**

1. Jeri R. Hanly and Elliot B.Koffman, Problem solving and Program Design in C 7th Edition, Pearson
2. B.A.ForouzanandR.F.GilbergCProgrammingandDataStructures,CengageLearning,(3rdEdition)

**REFERENCEBOOKS:**

1. BrianW.Kernighan and Dennis M. Ritchie, The C Programming Language, PHI
2. E.Balagurusamy,ComputerfundamentalsandC,2ndEdition,McGraw-Hill
3. YashavantKanetkar,LetUsC,18th Edition,BPB
4. R.G. Dromey, How to solve It by Computer, Pearson(16thImpression)
5. Programming In C, Stephen G. Kochan, Fourth Edition, Pearson Education.
6. HerbertSchildt,C:TheCompleteReference,McGrawHill,4thEdition
7. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill



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## COURSE OUTCOMES

**Course Name: Programming for Problem Solving lab (C118)**

At the End of the course, student will be able to:

CO No	DESCRIPTION
C118.1	Solve the Problems by using Operators and typecasting. (Evaluation).
C118.2	Write the programs based on Branching and Looping statements. (Knowledge).
C118.3	Illustrate the Problems by using the recursion and Functions. (Comprehension).
C118.4	Analyze the programs based on Derived Data type. (Analysis).
C118.5	Develop the programs using Files (Synthesis).
C118.6	Solve the Problems by using the Searching and Sorting Technique.(Evaluation)

### CO s and Pos & PSOs Mapping

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
C118.1	2	2	3	-	1	-	-	-	-	-	-	2	2	2
C118.2	-	2	3	1	2	-	-	-	2	-	-	-	3	3
C118.3	1	2	3	-	2	-	-	-	-	-	-	-	2	-
C118.4	-	2	3	-	1	-	-	-	-	-	2	-	-	-
C118.5	3	2	2	-	-	-	-	-	-	-	2	-	-	-
C118.6	2	2	2	2	1	-	-	-	-	-	-	-	3	-
<b>Avg</b>	<b>2</b>	<b>2</b>	<b>2.6</b>	<b>1.5</b>	<b>1.4</b>				<b>2</b>		<b>2</b>	<b>2</b>	<b>2.5</b>	<b>2.5</b>

3-High

2-Medium

1-Low



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## PROGRAMMING FOR PROBLEM SOLVING LAB

### LIST OF PROGRAMS AND THEIR CO,PO,PSO MAPPING

Week no.	Name of the program	CO	PO/PSO	
			PO	PSO
1	<p>a. Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.</p> <p>b. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.</p>	C118.1	PO1, PO2, PO3, PO5, PO12	PSO1PS O2
2	<p>a. Write a program for finding the max and min from the three numbers.</p> <p>b. Write the program for the simple, compound interest.</p> <p>c. Write program that declares Class awarded for a given percentage of marks, where mark &lt; 40% = Failed, 40% to &lt; 60% = Second class, 60% to &lt; 70% = First class, &gt;= 70% = Distinction. Read percentage from standard input.</p> <p>d. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the</p> <p>e. <math>5 \times 1 = 5</math></p> <p>f. <math>5 \times 2 = 10</math></p> <p>g. <math>5 \times 3 = 15</math></p> <p>h. Write a program that shows the binary equivalent</p>	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1PS O2

	of a given positive number between 0 to 255.			
3	<p>a. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula <math>s = ut + \frac{1}{2} at^2</math> where <math>u</math> and <math>a</math> are the initial velocity in m/sec (<math>=0</math>) and acceleration in <math>m/sec^2</math> (<math>=9.8 m/s^2</math>)).</p> <p>b. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators <math>+</math>, <math>-</math>, <math>*</math>, <math>/</math>, <math>\%</math> and use Switch Statement)</p> <p>c. Write a program that finds if a given number is a prime number</p> <p>d. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.</p> <p>e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first <math>n</math> terms of the sequence.</p> <p>f. Write a C program to generate all the prime numbers between 1 and <math>n</math>, where <math>n</math> is a value supplied by the user.</p> <p>g. Write a C program to find the roots of a Quadratic equation.</p> <p>h. Write a C program to calculate the following, where <math>x</math> is a fractional value.</p> <p>i. <math>1 - \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{6}</math></p> <p>j. Write a C program to read in two numbers, <math>x</math> and <math>n</math>, and then compute the sum of this geometric progression: <math>1 + x + x^2 + x^3 + \dots + x^n</math>. For example: if <math>n</math> is 3 and <math>x</math> is 5, then the program computes <math>1 + 5 + 25 + 125</math>.</p>	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1  PSO2

4	<p>a. Write a C program to find the minimum, maximum and average in an array of integers.</p> <p>b. Write a functions to compute mean, variance, Standard Deviation, sorting of n elements in single dimension array.</p> <p>c. Write a C program that uses functions to perform the following:</p> <p>d. Addition of Two Matrices</p> <p>e. ii. Multiplication of Two Matrices</p> <p>f. iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.</p> <p>g. Write C programs that use both recursive and non-recursive functions</p> <p>h. To find the factorial of a given integer.</p> <p>i. ii. To find the GCD (greatest common divisor) of two given integers.</p> <p>j. iii. To find <math>x^n</math></p> <p>k. Write a program for reading elements using pointer into array And display the values using array.</p> <p>l. Write a program for display values reverse order from array using pointer.</p> <p>m. Write a program through pointer variable to sum of n elements from array.</p>	<p>C118.</p> <p>3</p> <p>C118.</p> <p>4</p>	<p>PO1,PO2, PO3,PO5</p> <p>PO2,PO3,P</p> <p>O5,PO11</p>	<p>PSO1</p>
5	<p>a. Write a C program to display the contents of a file to standard output device.</p> <p>b. Write a C program which copies one file to another, replacing all lower case characters with their upper case equivalents.</p> <p>c. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.</p>	<p>C118.</p> <p>5</p> <p>C118.4</p>	<p>PO1,PO2, PO3, PO11</p> <p>PO2,PO3, PO5,PO11</p>	

	<p>d. Write a C program that does the following: It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint:convert the strings using a to i function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function) The program should then read all 10 values and print them back.</p> <p>e. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).</p>			
6	<p>a. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.</p> <p>b. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent</p> <p>c. Write a C program that uses functions to perform The following operations:</p> <p>d. To insert a sub-string into a given main string from a given position.</p> <p>e. ii. To delete n Characters from a given position in a given string.</p> <p>Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)</p> <p>g. Write a C program that displays the position of a character ch in the string S or -1 if S doesn't contain ch.</p> <p>h. Write a C program to count the lines, words and characters in a given text.</p>	<p>C118. 3</p> <p>C118. 4</p>	<p>PO1, PO2, PO3, PO5</p> <p>PO2,PO3,P O5,PO11</p>	<p>PSO1</p>
7	<p>a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The</p>	<p>C118.3</p>	<p>PO1, PO2, PO3, PO5</p>	<p>PSO1</p>

	<p>menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.</p> <p>b. Write a C program to construct a pyramid of numbers as follows:</p> <pre> 1      *      1      1      * 12     **     23     22     ** 123    ***    456    333    ***                     4444    **                         *</pre>			
8	<p>a. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.</p> <p>b. Write a C program that uses non recursive function to search for a Key value in a given</p> <p>c. Sorted list of integers using binary search method.</p> <p>d. Write a C program that implements the Bubble sort method to sort a given list of</p> <p>e. Integers in ascending order.</p> <p>f. Write a C program that sorts the given array of integers using selection sort in descending order</p> <p>g. Write a C program that sorts the given array of integers using insertion sort in ascending order</p> <p>h. Write a C program that sorts a given array of names</p>	C118.6	PO1, PO2, PO3, PO4, PO5	PSO1

**ADDITIONAL PROGRAMS**

1	Write A C Program To Check ArmstrongNumber	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2
2	To reverse A Write A C Program Given Number	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2
3	Write A C Program To Arrange The Numbers In Ascending Order Using Quick Sort	C118.6	PO1, PO2, PO3, PO4,PO5	PSO1





# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Accredited by NAAC with A+ Grade, Recognized under 2(f) of UGC Act 1956.

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Khalsa Ibrahimpatnam, Sheriguda(V), Ibrahimpatnam(M), Ranga Reddy Dist., Telangana-501510

<https://siiet.ac.in/>

**Class:** IOT

**Semester:** I

**W.E.F:** 14-11-2022

**LH:** D-107

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 Khalsa Ibrahimpatnam, Sheriguda(V), Ibrahimpatnam(M), Ranga Reddy Dist., Telangana - 501 510  
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**Class:** IOT                      **Semester:** I                      **W.E.F:** 14-11-2022                      **LH:** D-110

	I 9:40- 10:30	II 10:30 - 11:20	III 11:20- 12:10	12:10- 12:45	IV 12:45- 1:35	V 1:35- 2:25	VI 2:25- 3:15	VII 3:15-4:00
MON	PPS	M&C	ENG	<b>L U N C H</b>	M&C	ENG	AP	ECSE(T)
TUE	M&C	PPS	AP		EWS/ELCS LAB			ENG(T)/M&C(T)
WED	AP LAB				ENG	PPS	E- CSE	WED
THU	EWS/ELCS LAB				AP	M&C	PPS	PPS(T)/AP(T)
FRI	M&C	AP	ECSE		PPS	AP	PPS	AP(T)/PPS(T)
SAT	M&C	ENG	AP		PPS LAB			M&C(T)/ENG(T)

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
MA101BS	Matrices and Calculus	V.SUJATHA	ME102ES	Engineering Workshop	W.MARUTHI /M.V.B.KALYAN
AP102BS	Applied Physics	P.SRINIVASA CHARY	AP105BS	Applied Physics - Lab	M.MANISHA/M.JANALAH
CS103ES	Programming for Problem Solving	G.KALYANI	CS107ES	Programming for Problem Solving Lab	G.KALYANI/U.NARESH
EN104HS	English for Skill Enhancement	S.SWAPNA	EN107HS	English Language and Communication Skills Lab	S.SWAPNA/E.PRARTHANA
CS106ES	Elements of Computer Science & Engineering	P.SRILATHA	MC101ES	Environmental Science	K.MOUNIKA

Class In-Charge

Time Table Coordinator

Head of The Department  
**Dr. R. YADAGIRI RAO**  
 M.Sc., B.Ed., M.Tech(CSE), Ph.D  
 Head of the Department  
 Department of H&S  
 SRI INDU INSTITUTE OF ENGG & TECH  
 Sheriguda, Ibrahimpatnam, Ranga Reddy Dist., Telangana-501 510



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Sheriguda (V), Ibrahimpatnam (M), R.R. Dist., Telangana-501510

X3

BR22

## Lab External Question paper

Year & Semester: I-I

Branch: IOT

Subject Name: Programming For Problem Solving Lab

Faculty Name: G.KALYANI

### SET-1

1. Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
2. Write the program for the simple, compound interest.
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
4. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
5. Write a program for display values reverse order from array using pointer.
6. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).
7. Write a C program to construct a pyramid of numbers as follows:  
1  
2 2  
3 3 3  
4 4 4 4
8. Write a C program that implements the Bubblesort method to sort a given list of integers in ascending order.

### SET-2

1. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.
2. Write program that declares Class awarded for a given percentage of marks, where mark <40% = Failed, 40% to <60% = Second class, 60% to <70% = First class, >= 70% = Distinction. Read percentage from standard input.
3. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, \*, /, % and use Switch Statement)
4. Write C programs that use both recursive and non-recursive functions
5. Write a program through pointer variable to sum of n elements from array.

6. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices, are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.

7. Write a C program to construct a pyramid of numbers as follows:

```
*  
* *  
* * *  
* *  
*
```

8. Write a C program that sorts the given array of integers using selection sort in descending order.

### SET-3

1. Write a program for find the max and min from the three numbers.

2. Write a program that prints a multiplication table for a given number and the number of rows in the table.

For example, for a number 5 and rows =3, the output should be:

5 x1 =5

5 x2 =10

5 x3 =15

3. Write a C program to find the roots of a Quadratic equation.

4. Write C programs that use both recursive and non-recursive functions to find the GCD (greatest common divisor) of two given integers.

5. Write a C program to display the contents of a file to standard output device.

6. Write a C program to construct a pyramid of numbers as follows:

```
1  
1 2  
1 2 3
```

7. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.

8. Write a C program that sorts the given array of integers using insertion sort in ascending order.

### SET-4

1. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula  $s = ut + \frac{1}{2} at^2$  where u and a are the initial velocity in m/sec(=0) and acceleration in m/sec<sup>2</sup> (=9.8 m/s<sup>2</sup>)).

2. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

3. Write a C program to find the minimum, maximum and average in an array of integers.
4. Write a C program that uses functions to perform the Multiplication of Two Matrices
5. Write a C program which copies one file to another, replacing all lower case characters with their upper case equivalents
6. Write a C program to construct a pyramid of numbers as follows:  
\*  
\* \*  
\* \* \*
7. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.
8. Write a C program that sorts a given array of names

### **SET-5**

1. Write a program that finds if a given number is a prime number.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence
3. Write a C program that uses functions to perform the Addition of Two Matrices
4. Write C programs that use both recursive and non-recursive functions to find  $x^n$ .
5. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.
6. Write a C program to construct a pyramid of numbers as follows:  
1  
2 3  
4 5 6
7. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
8. Write C programs that use both recursive and non-recursive functions to find the GCD (greatest common divisor) of two given integers.



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## PPS Lab External Time Table

### Examination Branch

A.Y.: 2022-23

SEM-I

DATE	Day	Branch	Session	HT.No	Total No of Students
10-3-2023	FRIDAY	AI&DS	FN	22X31A7201 TO 22X31A7264	64
10-3-2023	FRIDAY	IOT	AN	22X31A6901 TO 22X31A6963	63
11-3-2023	SATURDAY	AI&ML-A	FN	22X31A6601 TO 22X31A6650	50
11-3-2023	SATURDAY	CS	AN	22X31A6201 TO 22X31A6262	62
13-3-2023	MONDAY	DS	FN	22X31A6701 TO 22X31A6764	64
13-3-2023	MONDAY	AI&ML-B	AN	22X31A6251 TO 22X31A6297	47
14-3-2023	TUESDAY	CSE-A	FN	22X31A0501 TO 22X31A0565	65
14-3-2023	TUESDAY	CSE-C	AN	22X31A05D1 TO 22X31A05J1	62
15-3-2023	WEDNESDAY	CSE-B	FN	22X31A0566 TO 22X31A05D0	61
15-3-2023	WEDNESDAY	ECE & CIVIL	AN	22X31A0401 To 22X31A0464 22X31A6101 TO 22X31A6103	67

  
Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda (V) Ibrahimpatnam (M) R.R. Dist-501510

  
PRINCIPAL  
Sri Indu Institute of Engineering & Tech.  
Sheriguda (V), Ibrahimpatnam  
R.R. Dist. Telangana-501510.



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## PPS Lab External Time Table with Examiners

DATE	Day	Branch	Session	HT.No	Total No of Students	Internal Examiner	External Examiner
10-3-2023	FRIDAY	AI&DS	FN	22X31A72 01TO22X 31A7264	64	G.KALYANI 7980948376 kalyanig@yahoo.com	Mr.Srinivas Rao8977377795
10-3-2023	FRIDAY	IOT	AN	22X31A69 01TO22X 31A6963	63	G.KALYANI 7980948376 <a href="mailto:kalyanig@yahoo.com">kalyanig@yahoo.com</a>	Mr.B.S. Acharya967 6153956
11-3-2023	SATURDAY	AI&ML-A	FN	22X31A66 01TO22X 31A6650	50	T.ARUNA7 207914564 arunasrinivas@gmail.com	Mr.R.Aadil Ahmed 7780808860
11-3-2023	SATURDAY	CS	AN	22X31A62 01TO22X 31A6262	62	B.S.SWAPNAS HANTHI 9985528788 Swapnashanthi45@gmail.com	Ms. Vishalakshi 7032146627
13-3-2023	MONDAY	DS	FN	22X31A67 01TO 22X31A67 64	64	B.S.SWAPNA SHANTHI 9985528788 Swapnashanthi45@gmail.com	DrA Ravi
13-3-2023	MONDAY	AI&ML-B	AN	22X31A62 51TO22X 31A6297	47	T.ARUNA7 207914564 arunasrinivas@gmail.com	DrA Ravi



	TUESDAY	CSE-A	F N	22X31A05 01TO22X 31A0565	65	S.KIRAN9 704838922 kiransaggurthi c@gmail.com	Mr.CH.Ravindr a 9666205205
14-3-2023	TUESDAY	CSE-C	A N	22X31A05 D1TO22X 31A05J1	61	K.MOUNIKA 9052112672 k.mounika1507 @gmail.com	Ms.K.Sreedevi 8374652679
15-3-2023	WEDNESDAY	CSE-B	F N	22X31A05 66TO22X 31A05D0	65	S.KIRAN9 704838922 kiransaggurthi c@gmail.com	Ms.R.Shashikal a 9618559938
15-3-2023	WEDNESDAY	ECE &CIVI L	AN	22X31A04 01To22X3 1A0464 22X31A61 01TO22X 31A6103	62	K.MOUNIKA 9052112672 k.mounika150 7@gmail.com	Mr.B.Lalu

Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda(VIII), Ibrahimpatnam (M) R.R. Dist-501 510

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Sheriguda(VIII), Ibrahimpatnam  
R.R. Dist. Telangana-501 510.



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Sheriguda(V), Ibrahimpatnam (M), R.R. Dist., Telangana-

501510

X3

BR22

Year & Semester: I-I

Branch: IOT

## LAB OCCUPANCY CHART PROGRAMMING FOR PROBLEM SOLVING LAB

	I 9:40- 10:30	II 10:30- 11:20	III 11:20- 12:10		IV 12:45- 1:35	V 1:35- 2:25	VI.2.2 5- 3.15	VII 3.15- 4.00
MON	I BTECH I SEM CSE-A			L U N C H	I BTECH I SEM CSE-C			
TUE	I BTECH I SEM DATA SCIENCE-A				I BTECH I SEM ECE & CIVIL			
WED	I BTECH I SEM AI&ML-B				I BTECH I SEM CSE-B			
THU	I BTECH I SEM AIDS				I BTECH I SEM DS-B & CS			
FRI					I BTECH I SEM AI&ML-A			
SAT					I BTECH I SEM IOT			

Head of the Department  
Department of H&S  
SRI INDU INSTITUTE OF ENGG & TECH  
Sheriguda(V), Ibrahimpatnam (M), R.R. Dist-501510

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R.R. Dist. Telangana-501510





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Website: <https://siiet.ac.in/>

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## **PROGRAMMING FOR PROBLEM SOLVING LAB**

### **Do's**

1. Come with completed observation and record.
2. Remove your shoes or wear foot socks before you enter the lab.
3. Always keep quiet. Be considerate to other lab users.
4. Report any problems with the computer to the person in charge.
5. Shutdown the computer properly.
6. Wear ID card before entering into the lab.
7. Read and understand how to carry out an activity thoroughly before coming to the laboratory.
8. Write In time, Out time and system details in the login register

### **Don'ts**

1. Do not touch any part of the computer with wet hands.
2. Do not change system settings.
3. Do not hit the keys on the computer too hard.
4. Don't damage, remove, or disconnect any labels, parts, cables or equipment.
5. Do not install or download any software or modify or delete any system files on any lab computers.
6. Do not disturb your neighbouring students. They may be busy in completing tasks.
7. Do not remove anything from the computer laboratory without permission.
8. Do not use pen drives.



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Website:https://siiet.ac.in/

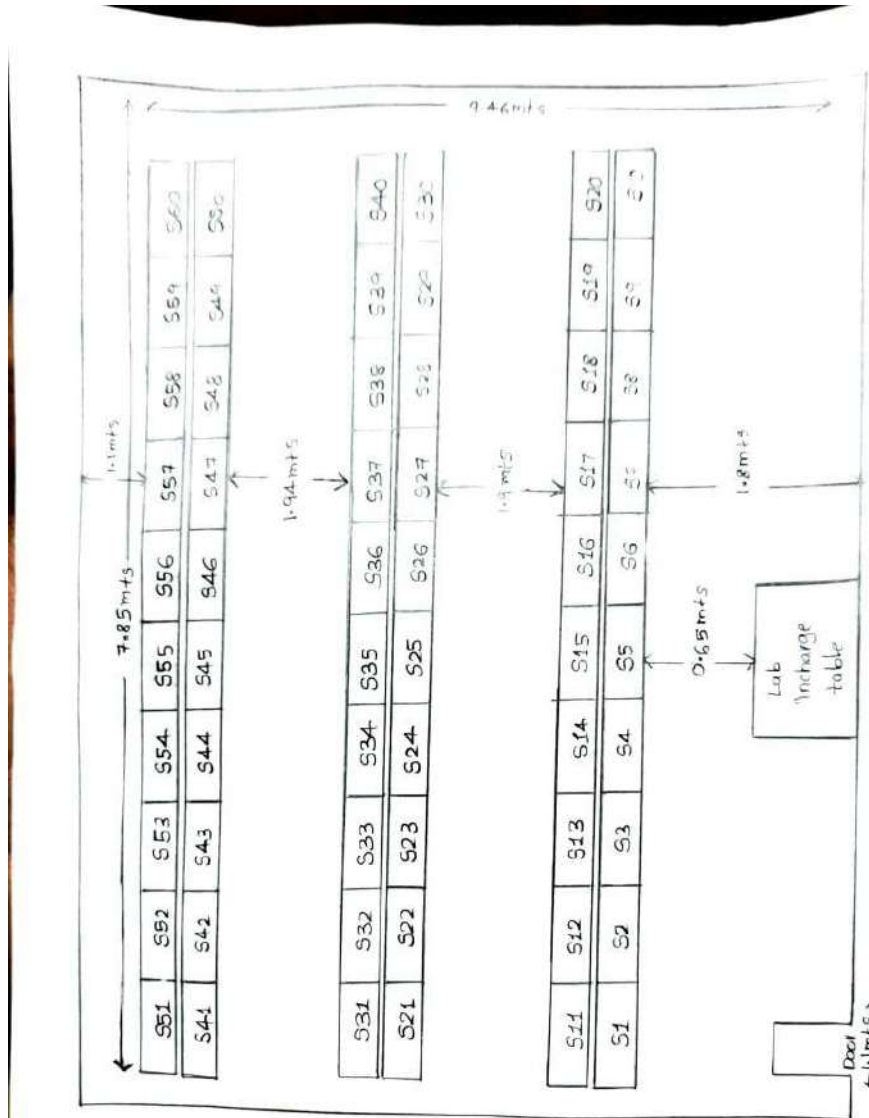
## PROGRAMMING FOR PROBLEM SOLVING LAB

### PHYSICAL LAB-1 FLOOR PLAN

ROOMNO:D-007

BLOCK:D

GROUND FLOOR



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Sri Indu Institute of Engineering & Tech  
Sheriguda(V), Ibrahimpatnam  
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Telangana-501510



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## **Lab manual link**

<https://drive.google.com/file/d/1Iowck5MMbLvyP5-WtxuLZ-sIa-jF2On2/view?usp=sharing>



# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

Course Outcome Attainment (Internal Examination-2)				
Name of the faculty	G.KALYANI			Academic Year:2022-2023
Branch & Section:	IOT			Examination: I Internal
Lab Course Name:	Programming For Problem Solving Lab		Year/semester:	I/I

S.No	HT No.	R+O+A	V+V	E+E+R
<b>Max. Marks</b> ==>		<b>10</b>	<b>10</b>	<b>10</b>
1	22X31A6901	10	9	10
2	22X31A6902	9	9	10
3	22X31A6903	10	9	10
4	22X31A6904	8	8	6
5	22X31A6905	10	8	7
6	22X31A6906	10	8	10
7	22X31A6907	10	9	10
8	22X31A6908	7	7	6
9	22X31A6909	10	8	9
10	22X31A6910	10	8	9
11	22X31A6911	9	8	8
12	22X31A6912	9	8	8
13	22X31A6913	10	8	8
14	22X31A6914	8	7	7
15	22X31A6915	9	7	6
16	22X31A6916	9	8	8
17	22X31A6917	8	6	6
18	22X31A6918	9	6	8
19	22X31A6919	10	8	9
20	22X31A6920	10	9	9
21	22X31A6921	8	7	6
22	22X31A6922	10	8	7
23	22X31A6923	10	8	10
24	22X31A6924	9	7	6
25	22X31A6925	10	8	10
26	22X31A6926	10	8	7
27	22X31A6927	9	8	7
28	22X31A6928	9	8	6
29	22X31A6929	10	9	10
30	22X31A6930	10	8	9
31	22X31A6931	10	8	10
32	22X31A6932	10	8	9
33	22X31A6933	9	7	7
34	22X31A6934	10	8	10
35	22X31A6935	10	9	10
36	22X31A6936	10	8	10
37	22X31A6937	8	7	6
38	22X31A6938	10	8	9
39	22X31A6939	10	8	8
40	22X31A6940	10	8	9
41	22X31A6941	9	7	5

42	22X31A6942	10	8	8
43	22X31A6943	10	8	9
44	22X31A6944	10	8	10
45	22X31A6945	10	7	8
46	22X31A6946	9	7	8
47	22X31A6947	10	8	10
48	22X31A6948	9	8	9
49	22X31A6949	10	8	9
50	22X31A6950	8	6	6
51	22X31A6951	8	7	7
52	22X31A6952	9	7	7
53	22X31A6953	9	7	6
54	22X31A6954	9	7	9
55	22X31A6955	9	7	4
56	22X31A6956	9	7	8
57	22X31A6957	9	7	6
58	22X31A6958	10	8	9
59	22X31A6959	9	7	7
60	22X31A6960	10	8	10
61	22X31A6961	10	7	9
62	22X31A6962	9	7	7
63	22X31A6963	10	8	9

Target set by the faculty / HoD	6.00	6.00	6.00
Number of students performed above the target	63	63	61
Number of students attempted	63	63	63
Percentage of students scored more than target	100%	100%	97%

**CO Mapping with Exam Questions:**

CO - 1	y	y	Y
CO - 2	y	y	Y
CO - 3	y	y	Y
CO - 4			
CO - 5			
CO - 6			

**CO Attainment based on Exam Questions:**

CO - 1	100%	100%	97%
CO - 2	100%	100%	97%
CO - 3	100%	100%	97%
CO - 4			
CO - 5			
CO - 6			

CO	Intrnal practical	E+E+R	OverallI	Level	Attainment Level	
CO-1	100%	97%	98%	3	1	40%
CO-2	100%	97%	98%	3	2	50%
CO-3	100%	97%	98%	3	3	60%
CO-4						
CO-5						
CO-6						
Attainment (Internal 1 Examination) =				<b>3</b>		



# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

## Department of Humanities and Sciences

### Course Outcome Attainment (Internal Examination-2)

Name of the faculty	G.KALYANI		Academic Year:2022-2023
Branch & Section:	IOT		Examination: II Internal
Lab Course Name:	Programming For Problem Solving Lab	Year/semester:	I/I

S.No	HT No.	R+O+A	V+V	E+E+R	Ppt
<b>Max. Marks</b> ==>		<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>
1	22X31A6901	10	8	9	10
2	22X31A6902	9	7	6	10
3	22X31A6903	10	8	9	10
4	22X31A6904	10	7	7	10
5	22X31A6905	10	8	9	10
6	22X31A6906	10	8	8	10
7	22X31A6907	6	6	6	10
8	22X31A6908	7	7	6	10
9	22X31A6909	10	7	8	10
10	22X31A6910	10	7	8	10
11	22X31A6911	10	8	9	10
12	22X31A6912	8	7	6	10
13	22X31A6913	10	8	8	10
14	22X31A6914	7	7	6	10
15	22X31A6915	10	7	7	10
16	22X31A6916	10	7	6	10
17	22X31A6917	7	7	6	10
18	22X31A6918	10	7	8	10
19	22X31A6919	10	7	8	10
20	22X31A6920	10	9	9	10
21	22X31A6921	8	7	6	10
22	22X31A6922	10	7	6	10
23	22X31A6923	10	9	9	10
24	22X31A6924	10	8	8	10
25	22X31A6925	10	7	7	10
26	22X31A6926	10	8	8	10
27	22X31A6927	10	8	9	10
28	22X31A6928	10	9	10	10
29	22X31A6929	10	8	9	10
30	22X31A6930	10	7	6	10
31	22X31A6931	10	8	8	10
32	22X31A6932	10	7	8	10
33	22X31A6933	8	7	6	10
34	22X31A6934	10	9	9	10
35	22X31A6935	10	9	10	10
36	22X31A6936	10	8	8	10
37	22X31A6937	10	8	9	10
38	22X31A6938	10	7	8	10

39	22X31A6939	10	7	7	10
40	22X31A6940	10	7	8	10
41	22X31A6941	8	7	6	10
42	22X31A6942	10	7	7	10
43	22X31A6943	10	7	8	10
44	22X31A6944	10	8	8	10
45	22X31A6945	10	7	6	10
46	22X31A6946	9	7	6	10
47	22X31A6947	10	8	8	10
48	22X31A6948	10	7	7	10
49	22X31A6949	10	7	8	10
50	22X31A6950	7	7	6	10
51	22X31A6951	8	7	6	10
52	22X31A6952	10	8	9	10
53	22X31A6953	10	8	8	10
54	22X31A6954	10	7	6	10
55	22X31A6955	7	7	6	10
56	22X31A6956	10	8	8	10
57	22X31A6957	7	7	6	10
58	22X31A6958	10	7	8	10
59	22X31A6959	8	7	6	10
60	22X31A6960	10	8	8	10
61	22X31A6961	10	7	7	10
62	22X31A6962	10	7	6	10
63	22X31A6963	10	7	8	10

Target set by the faculty / HoD	6.00	6.00	6.00	6.00
Number of students performed above the target	63	63	63	63
Number of students attempted	63	63	63	63
Percentage of students scored more than target	100%	100%	100%	100%

**CO Mapping with Exam Questions:**

CO - 1				
CO - 2				
CO - 3				
CO - 4	y	y	Y	y
CO - 5	y	y	Y	y
CO - 6	y	y	Y	y



**CO Attainment based on Exam Questions:**

CO - 1				
CO - 2				
CO - 3				
CO - 4	100%	100%	100%	100%
CO - 5	100%	100%	100%	100%
CO - 6	100%	100%	100%	100%

Attainment Level	
1	40%
2	50%
3	60%

CO	Intrnal practical	E+E+R	ppt	OverallI	Level
CO-1					
CO-2					
CO-3					
CO-4	100%	100%	100%	100%	3
CO-5	100%	100%	100%	100%	3
CO-6	100%	100%	100%	100%	3

Attainment (Internal 2 Examination) =

**3**



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY  
Department of Humanities and Sciences

**Course Outcome Attainment (University Examinations)**

Name of the faculty: G.KALYANI

Academic Year:2022-2023

Branch & Section: IOT

Year/Semester: I/I

Lab Course Name: Programming For Problem Solving Lab

S.No	Roll Number	Marks Secured
1	22X31A 6901	58
2	22X31A 6902	48
3	22X31A 6903	55
4	22X31A 6904	50
5	22X31A 6905	49
6	22X31A 6906	51
7	22X31A 6907	45
8	22X31A 6908	45
9	22X31A 6909	48
10	22X31A 6910	53
11	22X31A 6911	58
12	22X31A 6912	50
13	22X31A 6913	54
14	22X31A 6914	51
15	22X31A 6915	52
16	22X31A 6916	54
17	22X31A 6917	49
18	22X31A 6918	51
19	22X31A 6919	52
20	22X31A 6920	58
21	22X31A 6921	48
22	22X31A 6922	52
23	22X31A 6923	58
24	22X31A 6924	53
25	22X31A 6925	51
26	22X31A 6926	54
27	22X31A 6927	48
28	22X31A 6928	58
29	22X31A 6929	57
30	22X31A 6930	47
31	22X31A 6931	53
32	22X31A 6932	51
33	22X31A 6933	48
34	22X31A 6934	55

S.No	Roll Number	Marks Secured
35	22X31A 6935	58
36	22X31A 6936	52
37	22X31A 6937	51
38	22X31A 6938	52
39	22X31A 6939	50
40	22X31A 6940	51
41	22X31A 6941	48
42	22X31A 6942	46
43	22X31A 6943	54
44	22X31A 6944	53
45	22X31A 6945	48
46	22X31A 6946	47
47	22X31A 6947	51
48	22X31A 6948	52
49	22X31A 6949	48
50	22X31A 6950	46
51	22X31A 6951	48
52	22X31A 6952	55
53	22X31A 6953	54
54	22X31A 6954	51
55	22X31A 6955	49
56	22X31A 6956	49
57	22X31A 6957	51
58	22X31A 6958	50
59	22X31A 6959	46
60	22X31A 6960	49
61	22X31A 6961	49
62	22X31A 6962	46
63	22X31A 6963	51

AttainmentLevel	%students
1	40%
2	50%
3	60%



# SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

## Course Outcome Attainment

Name of the faculty: G.KALYANI

Academic Year:2022-2023

Branch & Section: IOT

Year/Semester:I/I

Lab Course Name: Programming For Problem Solving Lab

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	1.00	1.80
CO2	3.00		3.00	1.00	1.80
CO3	3.00		3.00	1.00	1.80
CO4		3.00	3.00	1.00	1.80
CO5		3.00	3.00	1.00	1.80
CO6		3.00	3.00	1.00	1.80
<b>Internal &amp; University Attainment:</b>			3.00	1.00	
<b>Weightage</b>			40%	60%	
<b>CO Attainment for the course (Internal, University)</b>			1.20	0.60	
<b>CO Attainment for the course (Direct Method)</b>			1.80		

**Overall course attainment level**

**1.80**



# SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Humanities and Sciences

Program Outcome Attainment (from Course)

Name of Faculty: G.KALYANI Academic Year: 2022-2023  
 Branch&Section: IOT Year/Semester: I/I  
 CourseName: Programming For Problem Solving Lab

## CO-POmapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	3		1							2	2	2
CO2		2	3	1	2				2				3	3
CO3	1	2	3		2								2	
CO4		2	3		1						2			
CO5	3	2	2								2			
CO6	2	2	2	2	1								3	
<b>Course</b>	<b>2.00</b>	<b>2.00</b>	<b>2.67</b>	<b>1.50</b>	<b>1.40</b>	<b>###</b>	<b>#####</b>	<b>#####</b>	<b>2.00</b>	<b>#####</b>	<b>2.00</b>	<b>2.00</b>	<b>2.50</b>	<b>2.50</b>

CO	Course Outcome Attainment
CO1	1.80
CO2	1.80
CO3	1.80
CO4	1.80
CO5	1.80
CO6	1.80
<b>Overall course attainment level</b>	<b>1.80</b>

## PO-ATTAINMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>CO Attainment</b>	<b>1.20</b>	<b>1.20</b>	<b>1.60</b>	<b>0.90</b>	<b>0.84</b>	<b>#####</b>	<b>#####</b>	<b>#####</b>	<b>1.20</b>	<b>#####</b>	<b>1.20</b>	<b>1.20</b>
<b>CO contribution to PO - 33%, 67%, 100% (Level 1/2/3)</b>												