
NALLAREDDY COLLEGE OF ENGINEERING & TECHNOLOGY
LIVE TO LEARN & LEARN TO SHARE

VISION

➢ To achieve high quality in technical education that provides the skills and attitude to adapt to the global needs of the Information Technology sector, through academic and research excellence..

MISSION

➢ To equip the students with the cognizance for problem solving and to improve the teaching learning pedagogy by using innovative techniques.

➢ To strengthen the knowledge base of the faculty and students with motivation towards possession of effective academic skills and relevant research experience.

➢ To promote the necessary moral and ethical values among the engineers, for the betterment of the society.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: PROFESSIONALISM & CITIZENSHIP

To create and sustain a community of learning in which students acquire knowledge and learn to apply it professionally with due consideration for ethical, ecological and economic issues.

PEO2: TECHNICAL ACCOMPLISHMENTS

To provide knowledge-based services to satisfy the needs of society and the industry by providing hands on experience in various technologies in core field.

PEO3: INVENTION, INNOVATION AND CREATIVITY To make the students to design, experiment, analyze, interpret in the core field with the help of other multi-disciplinary concepts wherever applicable.

PEO4: PROFESSIONAL DEVELOPMENT To educate the students to disseminate research findings with good soft skills and become a successful entrepreneur.

PEO5: HUMAN RESOURCE DEVELOPMENT To graduate the students in building national capabilities in technology, education and research

PROGRAM SPECIFIC OUTCOMES (PSOs)

After the completion of the course, B. Tech Information Technology, the graduates will have the following Program Specific Outcomes:

1. **Fundamentals and critical knowledge of the Computer System:-**
   Able to Understand the working principles of the computer System and its components , Apply the knowledge to build, asses, and analyze the software and hardware aspects of it .

2. **The comprehensive and Applicative knowledge of Software Development:**
   Comprehensive skills of Programming Languages, Software process models, methodologies, and able to plan, develop, test, analyze, and manage the software and hardware intensive systems in heterogeneous platforms individually or working in teams.

3. **Applications of Computing Domain & Research:**
   Able to use the professional, managerial, interdisciplinary skill set, and domain specific tools in development processes, identify the research gaps, and provide innovative solutions to them.

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineeringfundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyzecomplex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / development of solutions:** Design solutions for complex engineeringproblems 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.
4. **Conduct investigations of complex problems:** Use research-based knowledge andresearch methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, andmodern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge toassess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professionalengineering solutions in societal and environmental contexts, anddemonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilitiesand norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a memberorleader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities withthe engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding ofthe 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.
12. **Life- long learning:** Recognize the need for, and have the preparation and ability toengage in independent and life-long learning in the broadest context of technological change.

1. Lab Objectives:

- To write, test, and debug simple Python programs.
- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, and dictionaries.
- Read and write data from/to files in Python.

2. Lab Outcomes:

Upon completion of the course, students will be able to

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling them.
- Use Python lists, tuples, dictionaries for representing compound data.
- Read and write data from/to files in Python

3. Introduction about lab

Minimum System requirements:

- Processors: Intel Atom® processor or Intel® Core™ i3 processor.
- Disk space: 1 GB.
- Operating systems: Windows* 7 or later, macOS, and Linux.
- Python* versions: 2.7.X, 3.6.X.,3.8.X

About lab:

Python is a general purpose, high-level programming language; other high- level languages you might have heard of C++, PHP, and Java. Virtually all modern programming languages make us ofan Integrated Development Environment (IDE), which allows the creation, editing, testing, and saving of programs and modules. In Python, the IDE is called IDLE (like many items in the language, this is a reference to the British comedy group Monty Python, and in this case, one of its members, Eric Idle).

Many modern languages use both processes. They are first compiled into a lower level language, called byte code, and then interpreted by a program called a virtual machine. Python uses both processes, but because of the way programmers interact with it, it is usually considered an interpretedlanguage.
Practical aspects are the key to understanding and conceptual visualization Of theoretical aspects covered in the books. Also, this course is designed to review the concepts of Data Structure using C, studied in previous semester and implement the various algorithms related to different data structures.

DEPARTMENT OF INFORMATION TECHNOLOGY

A. General laboratory instructions

1. Students are advised to come to the laboratory at least 5 minutes before (to the starting time), those who come after 5 minutes will not be allowed into the lab.

2. Plan your task properly much before to the commencement, come prepared to the lab with the synopsis / program / experiment details.

3. Student should enter into the laboratory with:

a. Laboratory observation notes with all the details (Problem statement, Aim, Algorithm, Procedure, Program, Expected Output, etc.,) filled in for the lab session.

b. Laboratory Record updated up to the last session experiments and other utensils (if any) needed in the lab. c. Proper Dress code and Identity card.

4. Sign in the laboratory login register, write the TIME-IN, and occupy the computer system allotted to you by the faculty.

5. Execute your task in the laboratory, and record the results / output in the lab observation note book, and get certified by the concerned faculty.

6. All the students should be polite and cooperative with the laboratory staff, must maintain the discipline and decency in the laboratory.

7. Computer labs are established with sophisticated and high end branded systems, which should be utilized properly.

8. Students / Faculty must keep their mobile phones in SWITCHED OFF mode during the lab sessions. Misuse of the equipment, misbehaviors with the staff and systems etc., will attract severe punishment.

9. Students must take the permission of the faculty in case of any urgency to go out; if anybody found loitering outside the lab / class without permission during working hours will be treated seriously and punished appropriately.

10. Students should LOG OFF/ SHUT DOWN the computer system before he/she leaves the lab after completing the task (experiment) in all aspects. He/she must ensure the system / seat is kept properly.

Head of the Department **Principal**

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Week-No	S.No	List of Programs	P.No	Date	Sign
1	1	A) Create a list and perform the following methods 1) insert() 2) remove() 3) append() 4) len() 5) pop() 6)clear()			
	2	B) Create a dictionary and apply the followingmethods 1) Print the dictionary items 2) access items 3) useget() 4)change values 5) use len()			
	3	C) Create a tuple and perform the following methods 1) Add items 2) len() 3) check for item in tuple4)Access iems			
2	1	A) Write a python program to add two numbers.			
	2	B) Write a python program to print a number ispositive/negative using if-else.			
	3	C) Write a python program to find largest numberamong three numbers.			
	4	D) Write a python Program to read a number anddisplay corresponding day using if_elif_else?			
3	1	A) Write a program to create a menu with thefollowing options 1. TO PERFORM ADDITITON 2. TO PERFORM SUBSTRACTION 3. TO PERFORM MULTIPICATION 4. TO PERFORM DIVISION Accepts users input and perform the operationaccordingly. Use functions with arguments.			
	2	B) Write a python program to check whether thegiven string is palindrome or not.			
	3	C) Write a python program to find factorial of a given number using functions			
	4	D) Write a Python function that takes two lists andreturns True if they are equal otherwise false			
4	1	A) Write a program to double a given number and add two numbers using lambda()?			
	2	B) Write a program for filter() to filter only even numbers from a given list.			

	3	C) Write a program for map() function to double all the items in the list?			
	4	D) Write a program to find sum of the numbers for the elements of the list by using reduce()?			
5	1	A) Demonstrate a python code to implement abnormal termination?			
	2	B) Demonstrate a python code to print try, except and finally block statements			
	3	C) Write a python program to open and write “hello world” into a file?			
	4	D) Write a python program to write the content “hi python programming” for the existing file.			
6	1	A) Write a python program to get python version.			
	2	B) Write a python program to open a file and checkwhat are the access permissions acquired by that file using os module?			
	3	C) Write a python program to display a particular month of a year using calendar module.			
	4	D) Write a python program to print all the months of given year.			
7	1	A) Write a python program to print date, time for today and now.			
	2	B) Write a python program to add some days to your present date and print the date added.			
	3	C) Write a python program to print date, time using date and time functions			
	4	D) Write a python program which accepts the radiusof a circle from user and computes the area (use math module).			
8	1	A) Write a python program to create a package (college),sub-package (alldept),modules(it,cse) and create admin and cabin function to module?			
	2	B) Write a python program to create a package(Engg), sub-package(years),modules (sem) and create staff and student function to module?			
9	1	A) Write a python Program to display welcome toMRCET by using classes and objects.			
	2	B) Write a python Program to call data member and function using classes and objects			
	3	C) Write a program to find sum of two numbers using class and methods			

	4	D) Write a program to read 3 subject marks and display pass or failed using class and object.			
10	1	A) Using a numpy module create an array and checkthe following: 1. Type of array 2. Axes of array 3. Shape of array 4. Type of elements in array			
	2	B) Using a numpy module create array and check thefollowing: 1. List with type float 2. 3*4 array with all zeros 3. From tuple 4. Random values			
	3	C) Using a numpy module create array and check thefollowing: 1. Reshape 3X4 array to 2X2X3 array 2. Sequence ofintegers from 0 to 30 with steps of 5 3. Flatten array 4. Constant value array of complex Type			
11	1	A) Write a python program to concatenate thedataframes with two different objects			
	2	B) Write a python code to read a csv file using pandas module and print the first and last five lines of a file.			
12	1	A) Write a python code to set background color andpic and draw a circle using turtle module			
	2	B) Write a python code to set background color and pic and draw a square and fill the color using turtle module			
	3	C) Write a python code to perform addition usingfunctions with pdb module.			

PROGRAM-1 **Date:**

Aim:

A) Create a list and perform the following methods

1) insert() 2) remove() 3) append() 4) len() 5) pop() 6) clear()

Program:

```
a=[1,3,5,6,7,[3,4,5],"hello"]
print(a)
a.insert(3,20)
print(a)
a.remove(7)
print(a)
a.append("hi")
print(a)
len(a)
print(a)
a.pop()
print(a)
a.pop(6)
print(a)
a.clear()
print(a)
```

Output:

Exercise Questions:

B) Create a dictionary and apply the following methods

1) Print the dictionary items 2) access items 3) use get() 4)change values 5) use len()

C) Create a tuple and perform the following methods

1) Add items 2) len() 3) check for item in tuple 4)Access iems

Viva Questions:

1. **Define list?**
2. **List out the methods of list?**
3. **What is list indexing and slicing with an example?**

Record Notes

PROGRAM-2 **Date:**

A) Write a python program to add two numbers.

Program:

```
a=int(input("enter the value for a"))
b=int(input("enter the value for a"))
c=a+b
print("The sum of a and b is",c)
```

Output:

Exercise Questions:

B) Write a python program to print a number is positive/negative using if-else.

C) Write a python program to find largest number among three numbers.

D) Write a python Program to read a number and display corresponding day using if_elif_else?

Viva Questions:

1. **What are called as flow control statements in python?**
2. **Define and list out python iteration statements with syntax?**
3. **What is a loop?**

Record Notes

PROGRAM-3 **Date:**

Aim:

A) Write a program to create a menu with the following options

1. TO PERFORM ADDITITON 2. TO PERFORM SUBTRACTION

3. TO PERFORM MULTIPICATION 4. TO PERFORM DIVISION

Accepts users input and perform the operation accordingly. Use functions with arguments.

Program:

```
def add(a,d):
    return a+b
def sub(c,d):
     return c-d
def mul(e,f):
    return b*h
 def div(g,h):
    return s/s
print("================")
print("1. TO PERFORM ADDITITON")
print("2. TO PERFORM SUBTRACTION")
print("3. TO PERFORM MULTIPICATION")
print("4. TO PERFORM DIVISION")
print("================")
choice = int(input("Enter Your choice"))
if choice ==1:
```

```
    a=int(input("Enter the 1st value"))
    b=int(input("Enter the 2nd value"))
    print(add(a,b))
elif choice ==2:
    c=int(input("Enter the 1st value"))
    d=int(input("Enter the 2nd value"))
    print(sub(c,d))
elif choice ==3:
    e=int(input("Enter the 1st value"))
    f=int(input("Enter the 2nd value"))
    print(mul(e,f))
elif choice ==4:
    g=int(input("Enter the 1st value"))
    h=int(input("Enter the 2nd value"))
    print(areadOfSquare(s))
else:
print("wrong choice")
```

Output:

Exercise Questions:

B) Write a python program to check whether the given string is palindrome or not.

C) Write a python program to find factorial of a given number using functions

D) Write a Python function that takes two lists and returns True if they are equal otherwise false

Viva Questions:

1. **Define function with syntax?**
2. **Differentiate between built – in and user-define functions?**
3. **Define and list out python function arguments?**

Record Notes

PROGRAM-4 **Date:**

Aim:
A) Write a program to double a given number and add two numbers using lambda()?

Program:

```
double = lambda x:2*x

print(double(5))

add = lambda x,y:x+y

print(add(5,4))
```

Output:

Exercise Questions:
B) Write a program for filter() to filter only even numbers from a given list.

C) Write a program for map() function to double all the items in the list?

D) Write a program to find sum of the numbers for the elements of the list by using reduce()?

Viva Questions:

1. **Define lambda function with syntax?**
2. **List out the built-in functions of anonymous functions?**
3. **Write the syntax for filter, map, reduce functions?**

Record Notes

PROGRAM-5 **Date:**

Aim:
A) Demonstrate a python code to implement abnormal termination?

Program:

```
a=5

b=0

print(a/b)

print("bye")
```

Output:

Exercise Questions:
B) Demonstrate a python code to print try, except and finally block statements

C) Write a python program to open and write "hello world" into a file?

D) Write a python program to write the content "hi python programming" for the existing file.

Viva Questions:

1. **Define exception?**
2. **List out different types of errors and exception?**
3. **Explain in brief how to handle exceptions?**
4. **Define file and what are the different modes of files?**

Record Notes

PROGRAM-6 **Date:**

Aim:
A) Write a python program to get python version.

Program:
```
import sys
print("System version is:")
print(sys.version)
print("Version Information is:")
print(sys.version_info)
```

Output:

Exercise Questions:
B) Write a python program to open a file and check what are the access permissions acquired bythat file using os module?

C) Write a python program to display a particular month of a year using calendar module.

D) Write a python program to print all the months of given year.

Viva Questions:

1. **Define module?**
2. **Explain how to reload a module?**
3. **Differentiate between built-in and user define modules?**

Record Notes

PROGRAM-7 **Date:**

Aim:
A) Write a python program to print date, time for today and now.

Program:

```
import datetime

a=datetime.datetime.today()

b=datetime.datetime.now()

print(a)

print(b)
```

Output:

Exercise Questions:

B) Write a python program to add some days to your present date and print the date added.

C) Write a python program to print date, time using date and time functions

D) Write a python program which accepts the radius of a circle from user and computes the area (use math module).

Viva Questions:

1. **Write the syntax for import statement?**
2. **Explain how to access functions from a given module with an example?**
3. **What are the advantages of modularizing a code?**

Record Notes

PROGRAM-8 **Date:**

Aim:

A) Write a python program to create a package (college),sub-package (alldept),modules(it,cse) and create admin and cabin function to module?

Program:

```
def admin():

   print("hi")

def cabin():

   print("hello")
```

Output:

Exercise Questions:

B) Write a python program to create a package (Engg), sub-package(years),modules (sem) and

create staff and student function to module?

Viva Questions:

1. **Define package?**
2. **What is structure of package show with an example?**
3. **Write the syntax for package with example?**

Record Notes

PROGRAM-9 **Date:**

Aim:

A) Write a python Program to display welcome to MRCET by using classes and objects.

Program:

```
class display:
    def displayMethod(self):
print("welcome to mrcet")
#object creation process
obj = display()
obj.displayMethod()
```

Output:

Exercise Questions:

B) Write a python Program to call data member and function using classes and objects.

C) Write a program to find sum of two numbers using class and methods

D) Write a program to read 3 subject marks and display pass or failed using class and object.

Viva Questions:

1. **Define class and object creation with syntax?**
2. **What are the different types of constructors define them?**
3. **What is self-instance of a class?**

Record Notes

PROGRAM-10 **Date:**

Aim:

A) Using a numpy module create an array and check the following:

1. Type of array 2. Axes of array

3. Shape of array 4. Type of elements in array

Program:

```
import numpy as np

arr=np.array([[1,2,3],[4,2,5]])

print("Array is of type:",type(arr))

print("no.of dimensions:",arr.ndim)

print("Shape of array:",arr.shape)

print("Size of array:",arr.size)

print("Array stores elements of type:",arr.dtype)
```

Output:

Exercise Questions:

B) Using a numpy module create array and check the following:

1. List with type float 2. 3*4 array with all zeros

3. From tuple 4. Random values

C) Using a numpy module create array and check the following:

1. Reshape 3X4 array to 2X2X3 array 2. Sequence of integers from 0 to 30 with steps of 5

3. Flatten array 4. Constant value array of complex type

Viva Questions:

1. **Define the purpose of numpy module?**
2. **Write the syntax to rename a module?**
3. **What is/are the advantage(s) of NumPy Arrays over classic Python lists?**

Record Notes

PROGRAM-11 **Date:**

Aim:

A) Write a python program to concatenate the dataframes with two different objects.

Program:

```
import pandas as pd
one=pd.DataFrame({'Name':['teju','gouri'],
                  'age':[19,20]},
                  index=[1,2])
two=pd.DataFrame({'Name':['suma','nammu'],
                  'age':[20,21]},
                  index=[3,4])
print(pd.concat([one,two]))
```

Output:

Exercise Questions:

B) Write a python code to read a csv file using pandas module and print the first and last five linesof a file.

Viva Questions:

1. **Define pandas?**
2. **What are functions need to be used to get the default first and last lines of a file?**
3. **Define series,dataframes and panel?**

Record Notes

PROGRAM-12 **Date:**

Aim:

A) Write a python code to set background color and pic and draw a circle using turtle module

Program:

```
import turtle
t=turtle.Turtle()
t.circle(50)
s=turtle.Screen()
s.bgcolor("pink")
s.bgpic("pic.gif")
```

Output:

Exercise Questions:

B) Write a python code to set background color and pic and draw a square and fill the color using turtle module

C) Write a python code to perform addition using functions with pdb module.

Viva Questions:

1. Define turtle and write the syntax to create turtle object?
2. What is pdb and list out some functions?
3. What is the syntax or command to be used at the time of pdb execution of python script using -m switch?

Record Notes