



## AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Permanently Affiliated to JNT University Kakinada,  
Accredited by NAAC and Recognized under 2(f) & 12 (b) by UGC, New Delhi)  
Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

Date: 13- 1- 2020.

### CIRCULAR

On behalf of the Computer Science and Engineering Department, AIET is encouraging twelve weeks NPTEL certificate course on **"Programming Data Structures and Algorithms Using Python"** during 20<sup>th</sup> January 2020 to 16<sup>th</sup> March 2020 for all the II Year students of Computer Science and Engineering Department. I advice to all the students of II Year CSE to enroll your details for above course. For more details you may consult course coordinator Mrs. J. Madhuri, Assistant Professor, CSE.


**Resource Person:** Dr. Madhavan Mukund

Professor

Mathematical Institute

NPTEL, Chennai

Copy to: Principal, AIET

  
Head of the Department  
Computer Science and Engineering  
Avanathi Institute of Engg & Technology  
Tamaram, Makavarapalem Md  
Visakhapatnam District, Pin-531113



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### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Duration: 20/1/2020 to 16/3/2020

#### Programming, Data Structures and Algorithms Using Python

#### SYLLABUS

**Week 01:** Informal introduction to programming, algorithms and data structures via GCD  
Downloading and installing Python, GCD in Python: variables, operations, control flow -  
assignments, condition-also, loops, functions.

**Week 02:** Python: types, expressions, strings, lists, tuples | Python memory model: names,  
mutable and immutable values | List operations: slices etc | Binary search | Inductive function  
definitions: numerical and structural induction | Elementary inductive sorting: selection and  
insertion sort | In-place sorting.

**Week 03:** Basic algorithmic analysis: input size, asymptotic, complexity,  $O()$  notation | Arrays  
vs lists | Merge sort | Quicksort | Stable sorting

**Week 04:** Dictionaries | More on Python functions: optional arguments, default values | Passing  
functions as arguments | Higher order functions on lists: map, Iterator, list comprehension

**Week 05:** Exception handling | Basic input/output | Handling files | String processing.

**Week 06:** Backtracking: N Queens, recording all solutions | Scope in Python: local, global,  
nonlocal names | Nested functions | Data structures: stack, queue | Heaps

**Week 07:** Abstract datatypes | Classes and objects in Python | "Linked" lists: find, insert, delete |  
Binary search trees: find, insert, delete | Height-balanced binary search trees.

**Week 08:** Efficient evaluation of recursive definitions: memoization | Dynamic programming:  
examples | other programming languages: C and manual memory management | other  
programming paradigms: functional programming.

*J. Maheshwari*  
Coordinator

*PAJ*

Head of the Department

Computer Science and Engineering  
Avanthi Institute of Engg & Technology  
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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**Programming, Datastructures and Algorithms using Python**

Dated: 20/1/2020

**II B.Tech STUDENTS ENROLLED LIST**

S.NO	ROLL.NO	NAME OF THE STUDENT
1	18811A0511	DWARAM SUSHMITHA YAMINI
2	18811A0515	GOLTI SAI KOTI MEGHANA
3	18811A0517	CHANDURI SATYA SURYA PAVAN
4	18811A0519	GORLE SRI SATYA
5	18811A0523	GURUCHARANA KRISHNA LAHARI
6	18811A0527	KADALI NISCHALA DEVI
7	18811A0531	KARAKAVALASA DHANALAKSHMI
8	18811A0534	KILAPARTHI DURGA PRASAD
9	18811A0537	KOTTE SAI GANESH
10	18811A0540	MADUGULA JAGAN MOHAN SATYA DURGA PRASAD
11	18811A0543	MARISETTI MEENAKSHI
12	18811A0547	PATHALA NAGENDRA
13	18811A0549	PILLA BHARGAVI
14	18811A0553	SALAPU NEELIMA DURGA BHAVANI
15	18811A0557	SIRUVURI VENKATAPATHI RAJU
16	18811A0560	T PRATYUSHA
17	18811A0563	VILLURI SATYA SAI
18	18811A0565	WASHINGTON VINEET DANIEL
19	18811A0567	YERRAMSETTI PADMAJA SURYAKALA
20	18811A0570	UDDAGIRI SAI KISHORE
21	19815A0504	MAPATHINA VAMSI KRISHNA

*J. Madhu*  
Coordinator

*BA*  
HOD

Principal  
Avanathi Institute of Engg. & Technology  
Tamaram, Makavarapalem Md.,  
Visakhapatnam District., Pin: 531113

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This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, <https://nptel.ac.in/noc/>

Roll No: NPTEL20CS26S1863563

To  
CHANDURI SATYA SURYA PAVAN  
106100  
PEDABODDEPALLI  
VISHAKHAPATNAM  
ANDHRA PRADESH - 531116  
PH. NO :9985266320



No. of credits recommended by NPTEL:2

An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.



## NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to

**CHANDURI SATYA SURYA PAVAN**

for passing the course

**Programming, Data Structures and  
Algorithms using Python**

with Score\* **96** %

Covid-19  
Impacted  
January 2020  
semester

Prof. Devendra Jalihal  
Chairman  
Centre for Continuing Education, IITM

Jan-Mar 2020  
(8 week course)

Prof. Andrew Thangaraj  
NPTEL Coordinator  
IIT Madras



Indian Institute of Technology Madras



\*Continuous online assessment score

To validate and check scores: <https://nptel.ac.in/noc/>