XAVIER INSTITUTE OF ENGINEERING

A SISTER INSTITUTION OF ST. XAVIER'S COLLEGE

> **A Two Week Online Student Development Program on "Data Structures and Algorithms Using Python"**

Event Coordinator(s)

1. Prof. Smita Pawar
2. Prof. Shailaja Udtewar

Time & Place:

12th July 2021 to 23rd July 2021

5:00 p.m to 7:00 p.m (Monday to Friday)

Department:

Electronics and Telecommunication

No. of registrations

63 Students

TE (40)

BE (23)

OBJECTIVE:

Electronics and Telecommunication department had organized a two week Online Student Development Program on "Data Structures and Algorithms Using Python" which brings together the professors from IT, Computer and EXTC department to be the resource person and give in-depth knowledge of Data Structure and Algorithm and Python. This was a great opportunity for EXTC students to learn the subject while having hands on sessions on coding in python. This course was conducted for EXTC students from placements point of view.

SCOPE:

This SDP was planned for third year and final year EXTC students to have a practice of the Data structure and Algorithms subject and have hands on sessions in Python.

RESOURCE PERSONS:

1. Prof. Chhaya Narvekar   (IT)
2. Prof. Sushma Khanvilkar (Comp)
3. Prof. Vijay Jumb (Comp)

Prof. Smita Pawar and Prof. Shailaja Udtewar had organized and took the responsibilities of coordinators for the course.
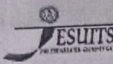
TOPICS COVERED:

1. Linear Data Structures
2. Stacks, queues and linked list
3. Nonlinear data structures
4. Graphs and Trees
5. Analysis of Algorithms
6. Sorting Techniques
7. Searching Techniques
8. Hashing
9. Real time applications
10. Overview of Interview Questions

Reference books and Session wise resource material including PPTs and code was uploaded on Google classroom.
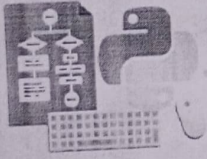
Homework and quizzes were conducted and result was shared with the participants.

A participation certificate was provided to 36 participants after attempting all the quizzes

EVENT BROCHURE:

Xavier Institute of Engineering
is organizing
A Two Week
Student Development Program
on
Data Structures and Algorithms Using Python
Under the Department of
Electronics and Telecommunication Engineering

DURATION AND TIMING

Two Week (12th July 2021 - 23rd July 2021)

Duration : 5.00pm to 7.00pm (Monday to Friday)

Platform: Google Meet

REGISTRATION

TE EXTC and BE EXTC Students can register online

Registration Link :
https://docs.google.com/forms/d/e/1FAIpQL
SeV4-9kc8V1uXlfRL2tnEtg089FBMlwHZ8h
5EUZPO5cMh5MQ/viewform?usp=pp_url
Complete your registrations on or before 10th July, 2021 till 5pm
After registration join google classroom at [link]

ABOUT INSTITUTION

Xavier Institute of Engineering (XIE), a sister institute of St. Xavier's College, Fort, Mumbai, is an Engineering college in central Mumbai, established in 2005, and is a part of an International Network of Jesuit Educational Institutions which includes 138 Universities and 3413 Educational Institutions in 120 countries. The Jesuit Educational Network in India includes 84 Colleges, 3 Universities and 3 Engineering colleges. Jesuit educational efforts are directed to training the minds and forming the heart. The management of XIE is well known for designing and upholding the highest standards for Engineering Education. Every year around 50 companies visit XIE for campus recruitment. In a Tol Engineering Survey conducted in 2015, XIE was rated 3rd among the Private, Unaided Engineering Colleges in Mumbai and among top 30 in India with a high Perceptual Score in 2018. XIE is now NAAC accredited. XIE is the only Engineering college in India to have a Gait laboratory. This laboratory is sponsored by Marquette University, USA.

VISION OF XIE

To nurture the joy of excellence in a world of high technology

MISSION OF XIE

To strive to match global standards in technical education by interaction with industry, continuous staff training and development of quality of life

ABOUT THE DEPARTMENT

Electronics and Telecommunication department of Xavier Institute of Engineering is delighted to announce a course on "Data Structure Using Python" which brings together the professors from IT, Computer and EXTC department to be the resource person and give us in-depth knowledge of Data Structure and Algorithm and Python. This is a great opportunity for EXTC students to learn the subject while having hands on sessions on coding in python.

DEPARTMENT VISION

To nurture the joy of excellence in a world of Electronics and Telecommunication.

DEPARTMENT MISSION

M1. To equip the students with strong foundation to enable them for higher studies and lifelong learning.
M2. To educate the students for the state of art technologies to meet challenges of the Electronics and Telecommunication field.
M3. To collaborate and associate with reputed Institutes from India and Abroad to enhance academic excellence.
M4. To impart total quality education for developing innovative, entrepreneurial and ethical professionals, fit for globally competitive environment
M5. To strengthen the soft skills and logical thinking of students through co-curricular and extra-curricular activities.

COURSE CONTENTS

- Introduction to data structures
- Stack Data Structure
- Queue Data Structure
- Implementation of Stack and Queue in Python
- Linked List
- Trees
- Implementation of the concept of tree in Python
- Graphs
- Analysis of Algorithm with Sorting and Searching Techniques
- Implementation of Sorting and searching algorithms and analysis using Python

RESOURCE PERSONS

- Prof. Chhaya Narvekar(IT)
- Prof. Sushma Khanvilkar(Comp)
- Prof. Vijay Jumb (Comp)

ORGANIZING COMMITTEE

Chief Patrons

Fr. Dr. Arun de Souza, S.J., Chairman, XIE
Fr. Dr. John Rose, S.J., Director, XIE

Patrons

Dr. Y. D. Venkatesh, Principal, XIE
Fr. Fabian Barreto, S.J., Administrator, XIE

Convener

Dr. Vidya Sarode, HoD, EXTC

Coordinators

Prof. Smita Pawar, Assistant Professor, Dept. of EXTC
Ph : 9820997297 Email : smita.p@xavier.ac.in

Prof. Shailaja Udtewar, Assistant Professor, Dept. of EXTC
Ph : 9029082163 Email : shailaja.u@xavier.ac.in

DETAILED SCHEDULE:

Xavier Institute of Engineering
Mahim, Mumbai 400016

Department of Electronics and Telecommunication Engineering

SDP on Data Structures and Algorithms using Python.
FOR TE EXTC and BE EXTC
12 July 2021 to 23 July 2021

Course Co-ordinators:
1. Prof. Smita Pawar
2. Prof. Shailaja Udtewar

Resource Persons:
1. Prof. Chhaya Narvekar (IT)
2. Prof. Sushama Khanvilkar (COMP)
3. Prof. Vijay Jumb (COMP)

Sr.No.	Day	Date	Topic	Topic Details		
				Session I		Session II
				5.00-7.00 pm		7.30 to 8.00 pm
1.	Monday	12/07/21	Introduction to data structures	• **Prerequisite for data structures-** Programming constructs, array, looping structures, Branching, Abstraction with structures, procedure/ function concept • Data types, Primitive data structures, user defined, categories of data structures. Abstract Data Type (Prof. Chhaya Narvekar)		Quiz 1 (Prerequisites & Introduction)
2.	Tuesday	13/07/21	Stack Data Structure	• Stack ADT • Stack simulation • Stack Applications (Prof. Chhaya Narvekar)		
3.	Wednesday	14/07/21	Queue Data Structure	• Queue ADT • Circular Queue • Priority Queue • Double Ended Queue • Applications (Prof. Sushama Khanvilkar)		

Xavier Institute of Engineering

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Department of Electronics and Telecommunication Engineering

					Quiz 2 (Stack & Queue)
4.	Thursday	15/07/21	Implementation of Stack and Queue in Python	• Implementation of Stack and Queue in Python (Prof. Sushama Khanvilkar)	
5.	Friday	16/07/21	Linked List	• Singly linked list ADT • Self-Referential structures • Operations on linked list • Applications of LL • Circular Linked List • Implementation of the concept of linked list in Python (Prof. Vijay Jumb)	Quiz 3 (Linked List)
6.	Monday	19/07/21	Trees	• Trees terminologies • Binary search tree: Tree creation, insertion, deletion and traversal • Other types of trees (Prof. Chhaya Narvekar)	
7.	Tuesday	20/07/21	Implementation of the concept of tree in Python	• Implementation of the concept of tree in Python (Prof. Sushama Khanvilkar)	Quiz 4 (Tree)
8.	Wednesday	21/07/21	Graphs	• Graph- representation, Types of graphs, Graph traversal • Minimum cost spanning tree algorithms • Applications of graph • Implementation of Graph in Python (Prof. Sushama Khanvilkar)	Quiz 5 (Graph)
9.	Thursday	22/07/21	Analysis of Algorithm with Sorting and Searching Techniques	• Properties • Time complexity and space complexity • Example insertion sort, selection sort, bubble sort • Linear search, Binary search (Prof. Chhaya Narvekar)	
10.	Friday	23/07/21	Implementation of Sorting and searching algorithms and analysis using Python	• Implementation of Sorting and searching algorithms and analysis using Python (Prof. Vijay Jumb)	Quiz 6 (Sorting & Searching)

FEEDBACK:

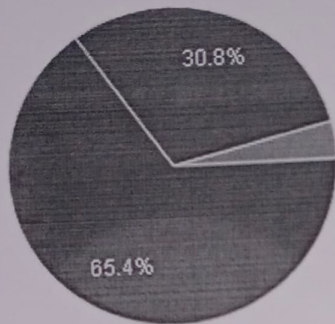How was the overall organization of the SDP?

26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

69.2%

30.8%
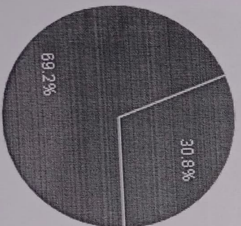
How relevant were the contents discussed by the speaker?
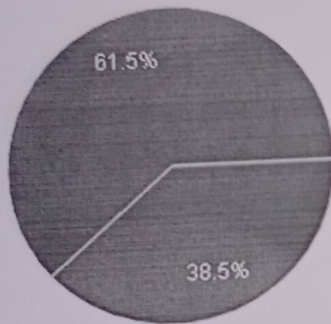
26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

30.8%

65.4%

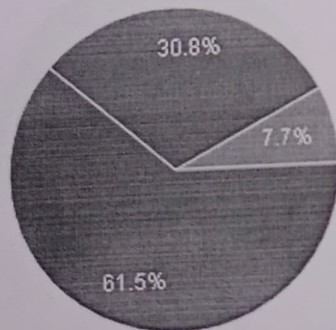## Are you satisfied with the time and venue/platform?

26 responses

- Excellent
- Very Good
- Good
- Fair
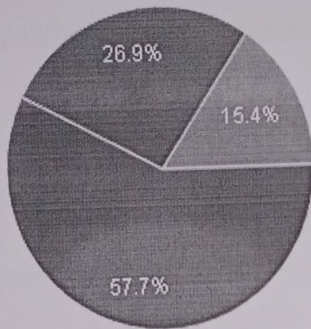- Poor

61.5%

38.5%

How much interesting these sessions were for you?

26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

30.8%

7.7%

61.5%

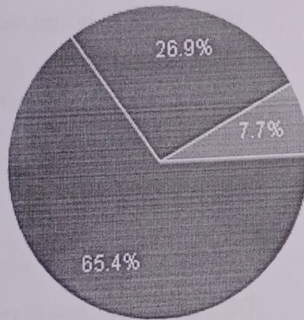## Did the lectures and practicals cover what you were expecting?

26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

26.9%

15.4%

57.7%

How much this SDP was useful from the knowledge and information point of view
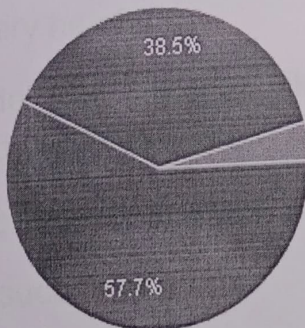
26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

26.9%

7.7%

65.4%

Overall effectiveness of the SDP

26 responses

- Excellent
- Very Good
- Good
- Fair
- Poor

38.5%

57.7%

What did you like the most about the SDP?

11 responses

The topics that we expect from this gots too beneficial for us

I didn't attendance

Quizzes and the interaction

Regarding the way of explaining the algorithms

Having practical right after explaining theory of a topic

Got to learn some new concepts and revision of some I knew . Enjoyed learning it

Clear and concise presentation of each topic

Doubt were solved immediately

Quiz

The whole session was quite good.

Time was bit too late. We have college whole day and then attending this lec is bit tiring. Over all the session was good.

Sessions were very helpful.

Providing the code basic structure (like what should the code do) and letting students try writing the code on their own...

Please include complexity analysis in more depth.

Hoping for more such workshops
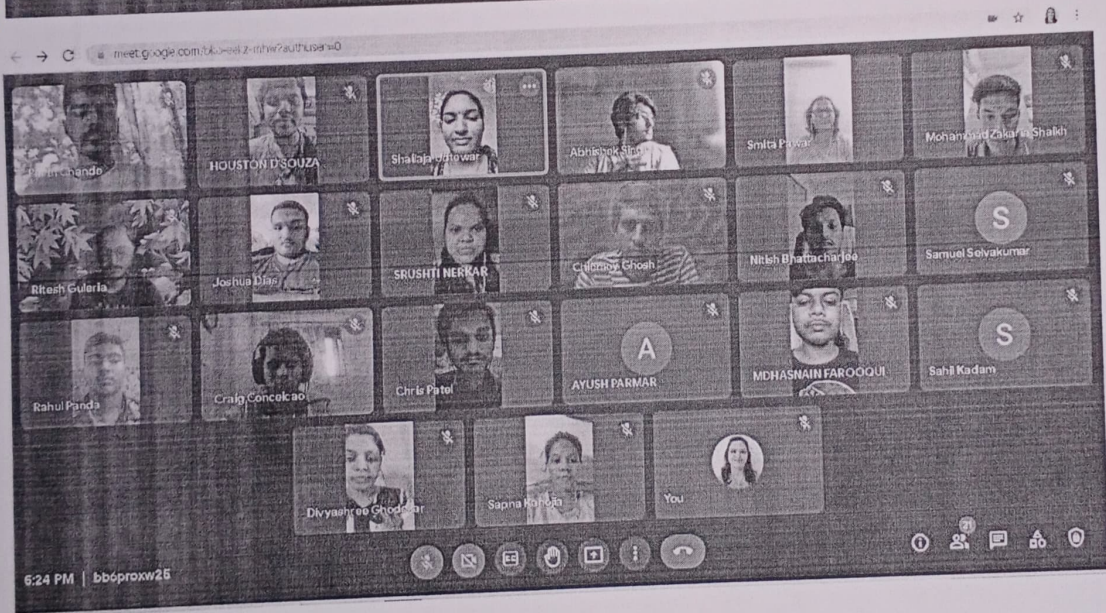
Prof. Smita Pawar

FDP Coordinator

Prof. Shailaja Udtewar

FDP Coordinator

Dr. Vidya Sarode

HoD, EXTC