A Report

On

Peer-Learning Training Programme on Python Programming For the Faculty Members of Core Branches

Jointly Organized By:

Centre for Internet of Things

&

Department of Electrical Engineering

Madhav Institute of Technology & Science Gwalior

Gole ka Mandir, Gwalior - 474005, M.P., India

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1. Introduction:

This report provides the details of the peer-learning training program, successfully organized by the Centre for Internet of Things and Department of Electrical Engineering, and attended by 16 faculties from CIoT, Chemical, Civil, CSE, Electrical, Electronics, IT, Management, MAC, and Mechanical engineering departments of the MITS Gwalior. These sessions, held from Jan 15, to Jan 19, 2023, aimed to equip participants with a solid foundation in Python programming concepts and practical skills, enabling them to effectively teach Python Programming courses for undergraduate students.

Recognizing Python's widespread use and versatility, the Centre for Internet of Things and Department of Electrical Engineering jointly took the initiative to conduct this workshop, with the help of experts from the both the host department itself. A formal request was submitted and subsequently approved by the Director of MITS Gwalior, as attached in Appendix 1. The expert panel brought extensive knowledge and experience in Python programming, ensuring high-quality instruction throughout the workshop.

The peer-learning sessions were designed to foster knowledge sharing and collaboration among faculty members, enhancing teaching capabilities and promoting a culture of continuous learning. The workshop aimed to create a vibrant learning community where participants could learn from each other and collectively enhance their Python programming skills.

The curriculum covered both foundational and advanced topics in Python programming, tailored to meet the needs of faculty members delivering Python courses. The sessions focused on imparting theoretical

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knowledge as well as practical skills that participants could directly apply in their teaching.

To maximize engagement and immersion, interactive teaching methodologies were employed, including lectures, discussions, coding exercises, collaborative projects, and code reviews. These activities created a dynamic learning environment that encouraged active involvement, critical thinking, and effective problem-solving.

Participants provided feedback through evaluation forms, expressing their thoughts, suggestions, and recommendations for future workshops. The overwhelmingly positive feedback affirmed the workshop's effectiveness in achieving its objectives and the participants' satisfaction with the content, delivery, and organization of the sessions.

This report presents a detailed breakdown of the workshop's structure, curriculum, engaging activities, participant feedback, and recommendations for future workshops. It showcases the Department of Electrical Engineering's commitment to fostering professional growth, promoting knowledge exchange within the institution, and empowering faculty members with the necessary expertise in Python programming.

2. Panel of Expert:

Peer-learning sessions on Python programming were enriched by the expertise of the highly qualified and esteemed panel of following faculties from the Centre of Internet of Things and the Department of Electrical Engineering:

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1) Dr. Gaurav Khare
2) Dr. Nikhil Paliwal
3) Dr. Saurabh Rajput
4) Dr. Vikram

3. Workshop Schedule:

The peer-learning training program was designed to span over one week, from Jan 15, to Jan 19, 2024, with each day focusing on different aspects of Python programming. This peer-learning session was initially proposed to be daily conducted in two sessions, however because of the scheduling conflict with the on-going End-Semester Examinations in MITS, this peer-learning training program was rescheduled to be conducted in single session on few days. The structure of the workshop included a combination of lectures, hands-on exercises, and interactive discussions.

- **Day 1: Basic of Python Programming**
  (Spearker: Dr. Saurabh Kumar Rajput, Asst. Prof., CIoT)

  The first day of the workshop emphasized building a solid foundation in Python programming. The topics covered during this day included: Python Charecter set, Token, variables, delimiters, inbuild functions, basic coding, and if-elif-else statements.

- **Day 2: Set, Tuples, and Dictionary**

  (Speaker: Dr. Nikhil Paliwal, Asst. Prof., EED)

  Second day of the peer-learning program was focused on the understanding of Set, Tuples, and Dictionary as used in the Python

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language. This included detailed lectures as well as in-class programming exercises.

- Day 3: Functions
  (Speaker: Dr. Vikaram, Asst. Prof., EED)

  During the third day of the peer-learning training program, Python control functions were introduced along with methods for loops and control statements, functions basics and advanced concepts. By means of practical exercises, the participants subsequently investigated libraries and their modules.

- Day 4: File Handling, and Libraries
  (Speaker: Dr. Gaurav Khare, Asst. Prof., CIoT)

  The first session on the fourth day of the peer-learning training program delved into Python's handling of external files. Attendees learned the significance of interacting with external files in Python, and were introduced to different techniques for reading, writing, or altering data within them, utilizing both Python's built-in functions and external libraries.

  During the second session, participants explored various libraries and their respective modules. Through hands-on exercises, they gained practical experience in accessing libraries, their modules, and the functions contained within them.

- Day 5: Data Analytics using Python
  (Speaker: Dr. Gaurav Khare, Asst. Prof., CIoT)

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On the last day, participants reviewed the Python concepts they had learned over the past four days and engaged in hands-on practice for Data Analytics in Python. Initially, they created a database using the NumPy library to simulate a faculty database for a department. Subsequently, they implemented data cleaning and preprocessing techniques using Pandas library, to address any abnormalities in the database. Following this, they conducted data analytics to analyze the statistical properties of various parameters within the database and grouped the faculties into different clusters based on these properties. Finally, they presented the results in both numerical and graphical formats as appropriate, using matplotlib library.

4. List of Participants:

An online registration form had been circulated among the faculty members of the institute, resulting in 16 faculties from various departments expressing interest in participating in a peer-to-peer learning program on Python Programming. The Director of MITS Gwalior nominated all 16 faculties to attend the program through Office Order Number 86, dated January 12, 2024, with further details provided in Appendix – 2.

Participants was required to sign daily attendance sheets, which is provided in Appendix - 3.

5. Assessment & Grading

Throughout the peer-learning training program, participants were assessed on their comprehension and application of the material through a combination of online quizzes and coding assignments provided at the end of each day. These assessments served as checkpoints to gauge participants' understanding and progress. Based on their performance in these assessments, participants were assigned cumulative grades, which were then

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reflected on their participation certificates [Appendix – 3]. This grading system ensured that participants received recognition for their efforts and demonstrated proficiency in the topics covered during the program.

6. Glimpse of Peer-learning Sessions:

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Dr. Sulochana Wadhwani
Professor & Head
Department of Electrical Engineering

Dr. Praveen Bansal
Assistant Professor & Coordinator
Centre for Internet of Things

Attachements:

1. Approval of the peer-learning program
2. Nominations of Participents
3. Attendenace Sheet

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1. Approval of the peer-learning training program

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Name of activity:	Peer-learning training programme
Title of activity:	Python Programming
Brief description of activity:	This activity is planned between Jan 15th, 2024 to Jan 19th, 2024 by the dept. of elect. engg. of MITS Gwalior. This face to face interactive session is being arranged to support the faculty members of other departments, for the course - Python Programming.
Objectives of activity:	• To improve the Python programming skills of faculty members from other departments.
Outcome of activity:	Outcome of this session will include: • Proficiency in programming fundamentals • Knowledge of Python programming language • Ability to write Python programs • Ability to use Python for data analysis
Mode of delivery:	Offline
Name of Coordinators:	In-house Coordinators: 1. Dr. Gaurav Khare 2. Dr. Saurabh Kumar Rajput 3. Dr. Vikram Saini 4. Dr. Nikhil Paliwal
Duration:	1 Week
Tentative date:	Jan 15, 2024 to Jan 19, 2024
Expected participants:	Faculty members of MITS Gwalior
Expected participants:	20 - 25
Course Plan:	Attached in a separate sheet

05/01/2024

(Dr. Praveen Bansal)
Assistant Professor & Coordinator
Centre for Internet of Things.

05/01/2024

(Dr. Sulochana Wadhwani)
Professor and Head
Dept. of Electrical Engg.

Submitted for Approval:

5.1.24

(Dr. R. K. Pandit)
Director
MITS, Gwalior

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2. List of Faculties nominated to attend the peer-learning training program

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Ref. No. 86

Date: 12/01/2024

ORDER

Following faculty members are nominated to attend the Peer-learning Training Program on **"Python Programming"**, scheduled from Jan. 15th - 19th, 2024 at Computer Lab, Department of Electrical Engineering.

Sr. No.	Name of Faculty	Department/Centre
1.	Dr Yashwant Sawle	Centre for Internet of Things
2.	Dr. Bhavna Rathore	Centre for Internet of Things
3.	Dr Murli Manohar	Centre for Internet of Things
4.	Prof. Swati Gupta	Chemical Engineering
5.	Dr. Shourabh Singh Raghuwanshi	Chemical Engineering
6.	Prof. Anish P. Jacob	Chemical Engineering
7.	Dr. Hemant Shrivastava	Civil Engineering
8.	Prof. Hemlata Arya	CSE
9.	Prof. Poonam Singh	Electrical Engineering
10.	Prof. Rachit Jain	Electronics Engineering
11.	Dr Vikas Mahor	Electronics Engineering
12.	Dr. Sushmita Chaudhary	Electronics Engineering
13.	Prof. Rajeev Kumar Singh	Information Technology
14.	Dr. Monica Chauhan Bhadoriya	Management
15.	Dr. Atul Kumar Ray	MAC
16.	Prof. Ajay Singh Rajput	Mechanical Engineering

(Dr. R. K. Pandit) 12.1.24

Director

Copy to:
1. Concerning faculty members
2. Coordinator, CIoT
3. HoD, Electrical
4. Exam Superintendent
5. Dean (Academics)
6. Registrar
7. Director Office

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3. Attendance Sheet:

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Peer Learning Training Program on "Python Programming"

S.No.	Faculty	Department	Day 1 15.01.2024 Session 1	Session 2	Day 2 16.01.2024 Session 1	Session 2	Day 3 17.01.2024 Session 1	Session 2	Day 4 18.01.2024 Session 1	Session 2	Day 5 19.01.2024 Session 1	Session 2
1	Dr. Yashwant Sawle	Centre for Internet of Things										
2	Dr. Bhavna Rathore	Centre for Internet of Things										
3	Dr. Murli Manohar	Centre for Internet of Things										
4	Prof. Swati Gupta	Chemical Engineering										
5	Dr. Shourabh Singh Raghuwanshi	Chemical Engineering										
6	Prof. Anush P. Jacob	Chemical Engineering										
7	Dr. Hemant Shrivastava	Civil Engineering							Ab	Ab	Ab	Ab
8	Prof. Hemlata Arya	CSE Department										
9	Prof. Poonam Singh	Electrical Engineering										
10	Prof. Rachit Jain	Electronics Engineering										
11	Dr. Vikas Mahor	Electronics Engineering										
12	Dr. Sushmita Chaudhari	Electronics Engineering										
13	Prof. Rajeev Kumar Singh	Information Technology							Ab	Ab	Ab	Ab
14	Dr. Monica Chauhan Bhadoriya	Management										
15	Dr. Atul Kumar Ray	Mathematics and Computing										
16	Ajay Singh Rajput	Mechanical Engineering									Ab	Ab