Organizing Committee

Chief Patron
Justice K. Venkataraman, Judge – Administrator

Patrons
Dr. M. Senthilmurugan, Director
Dr. P. Balasubramanian, Principal

Convenors
Dr. S. Vijayaraj, Prof. & Head, Mech. Engg.
Dr. S. Padmapriya, Prof. & Head, CSE

Coordinators
Dr. A. Balaji, Asso. Prof., Mech. Engg
Dr. K. Gajalakshmi, Asst.Prof ., CSE

Committee Members
Dr. A. Haja Maideen- Assoc. Prof- Mech Engg
Dr. R. Saravanan - Asst. Prof. –Mech. Engg
Mr. R. Purushothaman- Asst. Prof- Mech.Engg
Dr. J. Sudha- Prof- CSE
Dr. R. Sudha - Assoc. Prof- CSE
Mr. M. Ashokvel - Asst. Prof- CSE
Mr. A. Arun Pandian- Asst. Prof. –CSE
Mrs. K. Uma Maheswari - Asst. Prof- CSE

Number of Participants is Limited to 45
Registration Fee: Rs. 300/- Per Participant

For Registration

Last Date for Registration : 23.11.2026
Confirmation of Registration : 24.11.2026

About the FDP Program

The FDP aims to provide comprehensive knowledge of SEM and TEM principles, instrumentation, sample preparation, imaging and data interpretation. It will highlight multidisciplinary applications in materials characterization, encourage collaborative research and strengthen participants' practical understanding of advanced microscopy techniques.

Objectives of the FDP

- To introduce the principles, instrumentation and applications of Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) for advanced materials characterization.
- To enhance knowledge of sample preparation, microscopic imaging and microstructural analysis.
- To introduce domain-specific applications of SEM and TEM in Mechanical Engineering, Metallurgical and Materials Engineering, Computer Science and Engineering, Civil Engineering, Electrical and Electronics Engineering, Chemical Engineering and Biotechnology.
- To demonstrate the characterization of composites, metals, alloys, polymers, nanomaterials, construction materials, electronic materials and biomaterials.
- To explore AI-based microscopic image processing, feature extraction and classification for research applications.
- To promote multidisciplinary collaboration, interdisciplinary research and innovation through advanced microscopy techniques.

Outcomes

- Participants will gain a clear understanding of the fundamental principles and working mechanisms of SEM and TEM.
- Participants will develop knowledge of sample preparation, instrument operation, image acquisition and interpretation.
- Participants will be able to interpret microstructural features, surface morphology, defects and elemental composition of materials.
- Participants will understand the applications of electron microscopy in composites, nanomaterials, metals, polymers and biomaterials.
- Participants will be equipped to select appropriate microscopy techniques for their research requirements.
- The programme will encourage multidisciplinary collaboration, strengthen research capabilities and promote innovative research in materials characterization.

Two Days Faculty Development Programme (Offline FDP) On

"Advanced Electron Microscopy for Materials Characterization: SEM and TEM in Multidisciplinary Research"

26/11/2026 & 27/11/2026

Resource Person:
Dr. S. Sankaran, Professor, Department of Metallurgical and Materials Engineering, IIT Madras.
General Secretary, Electron Microscopy Society of India, (EMSI)

Jointly Organized by
Department of Mechanical Engineering
(Accredited by NBA)
(Recognized Research Center of Anna University, Chennai)
&
Department of Computer Science and Engineering
(Accredited by NBA)

EMSI

A.V.C. COLLEGE OF ENGINEERING
(An Autonomous Institution)

| Affiliated to Anna University, Chennai |
|Approved by AICTE, New Delhi |
|Accredited by NBA (CSE,EEE,ECE,Mech)|
| Accredited by NAAC with A' Grade [3rd cycle] |
| An ISO 9001:2015 Certified Institution |
| Recognized by UGC under (2f) |

Mannampandal, Mayiladuthurai - District,
Tamil Nadu - 609 305.
www.avccengg.net

About the Department of Mechanical Engineering

The Department of Mechanical Engineering at A.V.C. College of Engineering, Mannampandal, promotes academic excellence, research, and industry collaboration. Accredited by NBA in 2022 and reaccredited up to 2028, the department has qualified faculty, including seven Ph.D. holders, and nine well-equipped laboratories with equipment worth over ₹2.25 crore. It has produced 15 undergraduate and 3 postgraduate university rank holders, including two university first-rank holders. Recognized by Anna University as a research centre since 2013, the department has produced 13 Ph.D. graduates and currently 05 Ph.D. scholars pursuing research. It has secured AICTE-RPS funding of ₹24.8 lakh and AICTE-MODROB funding of ₹15 lakh. It also received SERB funding of ₹21.82 lakh. Its alumni work in leading industries and organizations.

About the Department of Computer Science and Engineering

The Department is equipped with state-of-the-art laboratories, modern computing facilities, Wi-Fi connectivity, and power backup, providing an excellent learning environment. It is permanently affiliated with Anna University, Chennai, and NBA-accredited up to 2028. Around 50% of the faculty members have over 10 years of experience and are actively involved in research and innovation. The Department has produced 53 University Ranks, received ₹14.32 lakh under the AICTE Research Promotion Scheme (2021–2022), and achieved success in the Smart India Hackathon National Finals with a ₹1 lakh award in 2020. It also promotes coding, research, NPTEL, IIT Bombay Spoken Tutorials, industry collaboration, and hands-on learning to enhance students' technical and professional skills.

For Registration Queries Contact:

Dr. A. Balaji - 9443481870

Dr. K. Gajalakshmi- 9150610187

Mr. R. Purushothaman- 9600617039

Who can participate?

- Faculty members and research scholars in Mechanical Engineering and Materials Science.
- Faculty members from Civil Engineering, Electrical and Electronics Engineering, Chemical Engineering and Biotechnology.
- Faculty members from Computer Science and Engineering, Artificial Intelligence and Data Science and Information Technology.
- Researchers working on composite materials, nanomaterials, polymers, alloys, biomaterials and advanced engineering materials.
- Academicians and research professionals interested in SEM, TEM, microstructural characterization and AI-based microscopic image analysis.
- Postgraduate students and research scholars involved in interdisciplinary materials research.

FDP Program Schedule

	Topic
26.11.2026 (DAY 1)	
9:30–10:00 AM	Inaugural Session
10:00–11:00 AM	Basics of Light and Electron Optics
11:00–11:15 AM	Tea Break
11:15 AM–12:45 PM	Instrumentation of SEM and Sample Preparation Techniques
12:45–1:45 PM	Lunch Break
1:45–3:15 PM	Microscopy and Spectroscopy Techniques in SEM (SE, BSE, EBSD, EDS, WDS, FIB)
3:15–3:35 PM	Tea Break
3:35–4:30 PM	Physics of Image Formation and Results Interpretation
27.11.2026 (DAY 2)	
9:15–10:45 AM	Instrumentation of TEM and Sample Preparation Techniques
10:45–11:00 AM	Tea Break
11:00 AM–12:30 PM	Microscopy and Spectroscopy Techniques in TEM (BF, DF, SAD, CBED, STEM, EELS)
12:30–1:30 PM	Lunch Break
1:30–3:00 PM	Physics of Image Formation and Results Interpretation
3:00–3:15 PM	Tea Break
3:15–4:00 PM	Open Discussion and Opportunities at IITM
4:00–4:30 PM	Valedictory Session

About A.V.C. College of Engineering

A.V.C. College of Engineering was established in 1996 and became an Autonomous Institution in 2026. It is situated along the Mayiladuthurai–Thirukkadaiyur main highway in Mayiladuthurai District, Tamil Nadu, amidst a scenic and evergreen landscape spanning 30.09 acres. The Institution offers seven Undergraduate (UG) programmes and two Postgraduate (PG) programmes, namely Master of Business Administration (MBA) and Master of Computer Applications (MCA). The Institution is accredited by the National Assessment and Accreditation Council (NAAC) with an 'A' Grade (3rd Cycle), and four of its Undergraduate programmes are accredited by the National Board of Accreditation (NBA). It is also certified under ISO 9001:2015 and recognised by the University Grants Commission (UGC) under Section 2(f).

Resource Person



Dr. S. Sankaran, Professor, Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras (IIT Madras)

Dr S. Sankaran is a professor in the Department of Metallurgical and Materials Engineering, IIT Madras. He received his PhD from IIT Kanpur in 2004 and subsequently served as a postdoctoral research associate at the University of Louisiana at Lafayette, USA, until 2007, before joining IIT Madras. His research interests include the deformation processing of materials, correlations between microstructure and mechanical behaviour in structural alloys, and transmission electron microscopy. He has published over 130 articles in peer-reviewed international journals and conference proceedings and holds four material-processing patents. He has guided 15 MS (master of science by research) and 15 PhD scholars so far and currently guides 5 PhD scholars and 6 post-docs in his group. He has been a visiting DAAD and Alexander von Humboldt fellow at the University of Münster, RWTH Aachen, and the Research Centre at Jülich, Germany, since 2012. He was also elected as a fellow of the Electron Microscopy Society of India (EMSI) in 2024. He has been serving as General Secretary of EMSI since 2025.