# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

**(A Govt. Aided UGC Autonomous & NAAC Accredited Institute, Affiliated to R.G.P.V. Bhopal, M.P)**

# CENTRE FOR LEARNING AND PROFESSIONAL ADVANCEMENT
# (CLPA)

## Vision of the Institute

To create world class quality Engineers and Technocrats capable of providing leadership in all spheres of life and society

## Branding Statement

**MITS**: **M**ission to **I**nnovate **T**echnology for **S**ociety

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# About The Institute

Madhav Institute of Technology and Science (MITS), Gwalior was established by His Highness Late Sir Jiwaji Rao Scindia, Maharaja of Erstwhile State of Gwalior, with an aim to create world class quality engineers and technocrats capable of providing leadership in all spheres of life and society. Founded as Madhav Engineering College in 1957 with three UG programmes, this temple of learning is now about 60 years old. Since its inception, the institute has constantly strived for excellence and quality in technical education. Today, the institute offers seventeen UG programmes (including recently started programmes in emerging areas such as IoT, AI & ML, Mathematics and Computing, AI and Robotics etc.) in major disciplines of Engineering & Technology with minor specialization in interdisciplinary domains and honours in the parent discipline. The institute also offers PG programmes in various specialization of Engineering & Technology and research programmes leading to Ph.D. degree. All the departments of the institute have well equipped laboratories and experienced faculty members. The institute is a minor QIP center of AICTE for Ph.D. programme in five disciplines. The institute was also funded by World Bank under TEQIP Phase-II and TEQIP Phase-III to strengthen the quality of technical education.

# The Centre for Learning and Professional Advancement (CLPA)

The Centre for Learning and Professional Advancement (CLPA) at Madhav Institute of Technology &amp; Science, Gwalior has been set up to support and meet the vision, mission, and branding statement of the institute. Further, it aims to assist the academic community in designing and practicing the teaching learning process that would best facilitate students learning. Apart from the faculty development in the emerging areas, this Centre will contribute in a great way to upgrade the skills of practicing engineers, technical staff members through various skill development programs, workshops, and short-term courses. Moreover, this will also facilitate and extend the module based training and short-term certification programs to the industry persons in the market driven technology areas.

## Faculty Development Program (FDP) on Recent Trends in Electronics Engineering

This faculty development program (FDP) will cover topics in next-generation applications in electronics, photonics, memory technologies, biochemical sensors, solar cells, energy storage and converters for the advancement of knowledge. This FDP is designed to give an exposure to design of experiments, material growth, characterizations, and device/system fabrication. This course is aimed to bring together engineers, technologists, scientists, and researchers through academic training and learning activities to augment and expand on acquired knowledge and encourage in-depth discussions through tutorials to prepare for research-led activities. Semiconductor devices such as Solar Cells, LEDs, Photodetectors, Sensors, Non-volatile memories & machine learning algorithms are used for various energy, optical, chemical, biological, computing & other applications. This program gives an insight into various electronic technologies from basic level to advanced level. Further, next-generation innovations in devices and various challenges involved will be discussed to elaborate on current research and enhancements in the respective fields.

### Course Outcomes:
- Understand the basic as well as recent research opportunities in fundamentals and advances in nanotechnology, optical networks an machine learning algorithms used in electronics engineering.
- Apply standard CAD tools for simulating the behaviour of nanomaterial, optical networks, micro strip patch antenna and various signals.

**Targeted Participants:** Faculty/ Research scholars

| Course Duration: | Registration Link: | Registration Deadline: |
|---|---|---|
| ~~02 – 06 May 2022~~ | https://forms.gle/7TXvk361z2K5otGx8 | ~~28 April 2022~~ |
| **Rescheduled:** 02 - 06 June 2022 | | 29 May 2022 |

## Faculty Development Program (FDP) on

## Computational Intelligence in Computer Vision, Machine Learning and Data Mining

The computational intelligence is an important domain for academicians and researcher. In view of this, there is a need of a platform, which enhance the research knowledge of faculty members and research scholar across the country. The proposed Faculty Development Programme enriches the research ideas and development activities of the above-mentioned target audience in the domain of Artificial Intelligence, Computer Vision, and its applications. Participants will receive an exposure about the Machine Learning and Data Analytics techniques to solve the real-world research problems. Hands-on training and practice sessions will help participants gain confidence on machine learning concepts by creating their own neural networks, object detection models etc. Thus, the programme will be valuable for participants to get the current research trends of AI based computational intelligence.

### Course Outcomes:
- Understand basic concepts regarding Machine Learning, Computer Vision and Data Mining.
- Analyse various techniques to enhance the applicability of Machine Learning, Computer Vision.

**Targeted Participants:** Faculty/ Research scholars

| Course Duration: | Registration Link: | Registration Deadline: |
|---|---|---|
| ~~02 – 06 May 2022~~ | https://forms.gle/iaBpZBvtpPXVT7KH6 | ~~28 April 2022~~ |
| **Rescheduled:** 04 – 08 July 2022 | | 01 July 2022 |

## Short Term Course (STC) on Advanced Materials and Manufacturing Techniques (AMMT-2022)

Material selection and manufacturing processes are playing critical role in today's competitive and sophisticated product development environment. There has been substantial advancement in research and development of polymers, ceramics, semiconducting materials, and composites as functional materials in the field of structural, biomedical, sensor and energy applications. This faculty development program is aimed to disseminate the state-of-art research and development activities in the advanced materials design and manufacturing process.

**Course Outcomes:**
- Understand the basic components and working in the area of advanced materials and manufacturing respectively.
- Apply the latest research and development insight for research in potential areas of manufacturing with flexibility and sustainability.

**Targeted Participants**: Faculty/Students/Research scholars/Industry participants

| **Course Duration:** | **Registration Link:** | **Registration Deadline:** |
|---|---|---|
| ~~09 – 13 May 2022~~ | https://forms.gle/g5Jbe25gAkDBsbXp8 | ~~05 May 2022~~ |
| **Rescheduled**: 04 – 08 July 2022 | | 01 July 2022 |

## Faculty Development Program (FDP) on Renewable Energy Sources Integration into the Power System

The Indian energy scenario is characterized by shortages of supply and increasing demand. A detailed study shows that the present gap between demand and supply of electrical energy may grow up to 70% by the year 2050, if corrective measures are not taken immediately. At the same time use of coal and other fossil fuels need to be rationalized in view of the local and global environmental concerns. The situation therefore needs corrections to introduce measures that reduce demand.

The power system is continuously evolving to meet the rise in demand, integrate renewable energy, and meet the decarbonization goal posed by the government. The evolution inevitably introduces formidable challenges to the system. Therefore, an in-depth understanding of the changing system is the need of the power industry. The challenges associated with Renewable Energy Integration to Power Systems, Distributed Energy Resources, Power System Planning and Modeling, will be covered in this FDP.

**Course Outcomes:**
- Understand the conceptual knowledge of renewable technologies, economics and regulation related issues associated with wind and alternative sources of energy
- Analyze the viability of renewable energy projects to integrate various options and assess the business and policy environment

**Targeted Participants**: Faculty/Research scholars

| **Course Duration:** | **Registration Link:** | **Registration Deadline:** |
|---|---|---|
| ~~18 – 22 May 2022~~ | https://forms.gle/nXpxRtwrLNEu51oTA | ~~14 May 2022~~ |
| **Rescheduled**: 22 - 26 June 2022 | | 19 June 2022 |

**Faculty Development Program (FDP) on**

**Mathematical Modelling of Digital Data Security in Image Processing and Cloud Computing**

This program will introduce participants to the basic mathematics behind the data security in image -processing and cloud computing. The program will cover the full spectrum of modelling of data security in Image-processing and Cloud computing application. They shall also be familiar with the programs/syntax written in different symbolic software (MATLAB, MATHEMATICA, etc.).

**Course Outcomes:**

- Understand the basic mathematics and the key concepts behind image-processing and cloud computing.
- Create models for data security in image-processing and cloud computing applications.

**Targeted Participants**: Faculty/Research scholars

| **Course Duration:** | **Registration Link:** | **Registration Deadline:** |
|---|---|---|
| ~~23 – 27 May 2022~~ | https://forms.gle/SmByenU36D526Cxm9 | ~~19 May 2022~~ |
| **Rescheduled**: 06 – 10 July 2022 | | 03 July 2022 |

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**Short Term Course (STC) on Emerging Areas in Civil & Environmental Engineering Applications**

Civil Engineering is the ever-changing industry. With advancements in technology, we've seen the civil engineering field evolve from working solely with concrete to now designing and building everything from bridges to buildings. This course focus on to the key developments in civil engineering like Ultra high-performance concrete, Earthquake resistant design of structures, introduction to hydro-geological modeling, Introduction to geo-synthetics and its applications, Rock discontinuities and properties, industrial safety & hazard, industrial dewatering, and Bituminous Mix Design.

**Course Outcomes:**

- Apply general and discipline-specific concepts and methodologies.
- Understand the technical materials in a professional manner to potentially diverse audiences and for a variety of circumstances.

**Targeted Participants:** Faculty/students/research scholars/Industry participants

| **Course Duration:** | **Registration Link:** | **Registration Deadline:** |
|---|---|---|
| 06 – 10 June 2022 | https://forms.gle/RpfearTHxtUF49ak9 | 03 June 2022 |

## Mode of Activity and Registration Fees

All the programs will be conducted in online mode through virtual platforms. The link of the same will be shared with the selected participants well in advance.

There is no registration fee.

## Certificate to Successful Participants

Upon successful completion of Short-Term course (STC)/ Faculty Development Program (FDP)/ Certificate Programs etc., the e-certificate will be provided to all the successful participants.

## Contact Details

Please feel free to contact at email id – **clpa@mitsgwalior.in** for any queries regarding the above programs.

Website Address: **www.mitsgwalior.in**