Title: Industry 4.0: Technology, Challenges and Opportunities for Indian SMEs

About Maharashtra Institute of Technology
Gramaudyogik Shikshan Mandal (GSM), Chh. Sambhajingar, Maharashtra, India is the parent trust (Organization) established in 1975. Maharashtra Institute Technology (MIT), Chh. Sambhajingar offers wide range of courses for under-graduation and post-graduation level in faculty of Engineering, Technology and Management. The institute is permanently affiliated to Dr. Babasaheb Ambedkar Marathwada University (BAMU), Aurangabad and is approved by AICTE, Delhi and DTE Maharashtra. NAAC has accredited the institute with Grade ‘A’. MIT has received recognition under Section 2(f) and 12 (B) of the UGC Act, 1956. UGC has granted an autonomous status to our institute. NBA has accredited the two programmes, namely B. Tech. in Computer Science and Engineering and B. Tech. in Mechanical Engineering for 3 years.

About the Department
The Department of Mechanical Engineering came into existence with inception of the institute in the year 2001 offering UG program in Mechanical Engineering. At present it offers both undergraduate and postgraduate courses in various facets of Mechanical Engineering. Department has been recognized as Research Center in Mechanical Engineering in the year 2012, under Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. The department has varied laboratories, workshop facilities and equipped with modern sophisticated equipment/facilities to carry out research in all areas related to Mechanical and Production Engineering. The faculty is actively involved in sponsored research and consultancy work and maintains an appreciable rapport with industries.

About the Faculty Development Program
Manufacturing excellence is critical to our nation’s economy. The Indian Government’s National Manufacturing Policy, drafted in 2011, is being revamped to include the aspects of Industry 4.0. The small and medium enterprises comprises more than 90 percent industries in India and therefore serving as backbone of Indian industries. Eventually, the implementation of Industry 4.0 technologies in SMEs has great potential to catalyze and transform India’s
manufacturing competencies. Leveraging the benefits of this technology, the SMEs shall be able to improve productivity, quality and profitability.

The FDP is aimed to explore and bring awareness about the essentials of Industry 4.0 and its ecosystem relevant to industry systems. It also aims to evolve promising outcomes towards the innovative teaching and learning, research, and teaching practices. It is expected to provide platform for the collaboration, coordination, and research in the related domain.

**Content of FDP to be covered**

The following topics shall be covered:

1. Industry 4.0: Technology and applications
2. Cyber physical systems for industrial machine tools
3. Application of AI and machine learning in industrial problems
4. Adoption Barriers for Industry 4.0 in the Agriculture Supply Chain
5. A generic tool condition monitoring system
6. Industry 4.0 Implementation challenges: Industry perspective
7. Application of AI in Industry 4.0
8. Digital twins for industries
9. Supply chain resilience: Handling of wide data in industry
10. Industry 4.0 Readiness assessment of MSEs & relevant challenges
11. Research article discussion session
12. Practical sessions/Labs

**Objectives:**

1. To create awareness about Industry 4.0 among the academia and to build the next generation academic institutions teaching and learning practices.
2. To empower the academic Diaspora for developing academic curriculum in accordance with Industry 4.0.
3. To understand challenges in adopting digital technologies for the identified functional areas in India’s Small And Medium Enterprises (SMEs).
4. To disseminate the scientific, theoretical and applied research in the field of Industry 4.0.
Expected Outcomes:
1. Understand the Industry 4.0 architecture and eco-system.
2. Understand the challenges of implementation of Industry 4.0 in Indian SMEs.
3. Develop strategies/roadmap for Industry 4.0 implementation for SMEs.
4. Handling of data effectively for improved decision making.
5. Identify and apply relevant pillars of industry 4.0 for SMEs.

Resource persons/Experts:
The resource persons for the program shall include faculty members of the host institute, NITIE, IIT’s, and Experts from reputed industries dealing with the lean and Industry 4.0 technologies.

Contact details of institute/coordinator:
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Professor, Mechanical engineering department,
Maharashtra Institute of Technology, Chh. Sambhajinagar (Aurangabad)
Satara village road, Off Beed Bypass,
Aurangabad - 431010

Targeted participants:
The faculty members of the AICTE approved institutions, research scholars, PG scholars, participants from Government, Industry (Bureaucrats/ Technicians/ Participants from Industry, etc.) and staff of host institutions are eligible to attend the program.

Session wise time schedule:

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<td>9:00 – 9:30</td>
<td>Inauguration</td>
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<td>9:30 – 12:00</td>
<td>Session 1 Industry 4.0:</td>
<td>9:30 – 12:00</td>
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<td>Session 1 Industry 4.0: Technology and applications</td>
<td>Session 3 Application of AI and machine learning in industrial problems</td>
<td>Session 5 A generic tool condition monitoring system</td>
<td>Session 7 Application of AI in Industry 4.0</td>
<td>Industrial visit</td>
<td>Session 10 Industry 4.0 Readiness assessment of MSEs &amp; relevant challenges</td>
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<td>Time</td>
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<td>12:00 – 1:00</td>
<td>Article Discussion</td>
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<td>12:00 – 1:00 Reflection Journal</td>
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<td>1:00 – 2:00</td>
<td>Lunch</td>
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<td>2:00 – 4:30</td>
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<td>Cyber physical systems for industrial machine tools</td>
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<td>Digital twins for industries</td>
<td>Supply chain resilience: Handling of wide data in industry</td>
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<td>4:30 – 5:30</td>
<td>Practical sessions/Labs</td>
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