Brief Profile of the Department:
The department of Mechanical Engineering offers an UG program, seven PG programs and a Ph.D program as well. There are 39 qualified and experienced faculty in the department. The department has liaison with reputed industries and R&D organizations like NFTDC, BHEL, DMRL, DRDL, CMTI, etc. Presently the department is handling several R&D projects and consultancy works. The department has also been recognized as a QIP centre for M. Tech and Ph.D programs.

About AICTE Training and Learning:
AICTE is committed for development of quality technical education in the country by initiating various schemes launched by Govt. of India, Ministry of Human Resource Development e.g. SWAYAM, MOOCs, Start-up Initiatives, Prime Minister Kaushal Vikas Yojana (PMKVY), Sansad Adarsh Gram Yojana (SAGY), Swachh Bharat/Unnat Bharat Abhiyan, Yoga Activities etc. There is a urgent need to train the young generation in skill sector and having faculty & technicians to be trained in their respective disciplines. It was felt that Training with latest tools and technologies is vital to keeping an institute competitive and more productive. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies.

About NIT Warangal:
National Institute of Technology Warangal, was established in 1959. Over the years it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 14 Departments offering eight undergraduate and 32 post-graduate programmes besides doctoral programmes. About 5000 students across the country and about 500 international students study in the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure in the form of state of the art library, seminar halls, guest houses and laboratories.

Eligibility:
The programme is open to the faculty of Engineering/Polytechnic colleges of AICTE recognized Institutions and Research Scholars working in Mechanical/Production/ Industrial Engineering and allied Departments.

Address for Correspondence:
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Telangana State, India- 506 004.
Mobile: +91 9440868867, 8332969321
Email: yrk@nitw.ac.in, raviykumar@yahoo.com

About Warangal:
Warangal is the second largest city of the new state of Telangana. It is situated at a distance of 140 km from the state capital Hyderabad (Nearest Airport). It is well connected by Rail (Kazipet Junction is two km away and Warangal Station is 12 km away) and by Road (NH 202). Warangal is renowned for its rich historical and cultural heritage. It was the seat of erstwhile Kakatiya dynasty. It is a place of tourist attraction with a number of historical monuments like Thousand Pillars Temple, Warangal Fort, Bhadrakali Temple, Ramappa Temple and Laknavaram Lake.
Overview of the Course:
3D printing is defined by the ASTM F42 committee as the fabrication of objects through the deposition of a material using a print head, nozzle, or other printer technology. However, the term is often used synonymously with additive manufacturing (AM). In particular, it is associated with machines that are lower in relative price and overall functional capability. 3D Printing is used to build physical models, prototypes, patterns, tooling components and production parts with materials like plastics, metal, ceramic, glass, and composite materials. 3D Printing systems use thin, horizontal cross sections from computer-aided design (CAD) models, 3D-scanning systems, medical scanners, and video games to produce parts in about every shape imaginable.

Design and manufacturing organizations use 3D Printed parts for products in the consumer, industrial, medical, and military markets, to name just a few. Digital cameras, mobile phones, engine parts, parts and assemblies for airplanes and medical implants are examples of a very long list of products which are benefited by the 3D Printing technology.

Objectives of the Course:
1. To update the participants with the state of the art technologies in 3D Printing.
2. To enable the participants to have experiential learning in 3D modeling, build-setup preparation and 3D printing through hands-on sessions.
3. To enable participants to learn the industrial, real life and pedagogical applications of 3D printing.
4. To facilitate the participants to develop low-cost 3D printers to teach engineering concepts.
5. To empower the participants to offer a course on 3D printing technology at their respective institutions.

Topics to be Covered:
- Global Perspective of 3D Printing Technology
- Solid Modelling & 3D Printing File Formats
- STL Files Generation and Correction
- Modelling of Medical Implants
- 3D Printing Software & Processes
- Design for Additive Manufacturing
- 3D Printing Processes
  - Polymer Printing
  - Ceramic Printing
  - Metal Printing
- Case Studies on – ‘Ideas to 3D Objects’
- Oral & Maxillofacial Surgeries: Real Case Studies
- 3D Digitizing & Reverse Engineering
- 3D Printing case studies in Automobile, Aerospace, Art & Jewelry, Fashion, Medical/Dental, etc.,

Resource Persons:
Faculty from NIT Warangal and reputed institutions/organizations/industries who are in the 3D Printing practice will deliver lectures and hands-on sessions.

Registration and Accommodation:
The participants to the course will be faculty & Ph.D Scholars from AICTE approved technical institutions. There is no Registration fee from any participant. No TA/DA will be paid to any participant. Participants will have to make their own stay arrangement during the five days. Only tea during sessions/working lunch will be provided to the participants. On completion of the programme on all the days, participants will be awarded a Certificate of participation by respective ATAL Academy. Link for the registration:
https://docs.google.com/forms/d/13nr087MCGPQmM6G3QXPZL26v1ZJNAoCjGaKvY7o3VH0/edit?vc=0&c=0&w=1

Application Form
A One-Week AICTE Training and Learning (ATAL) Academy Programme On 3D Printing and Design December 16-20, 2019
Department of Mechanical Engineering National Institute of Technology WARANGAL – 506 004 Telangana State, INDIA

1. Name:
2. Date of Birth:
3. Designation:
4. Institute:
5. Address for Communication:
6. E-mail:
7. Mobile:
8. Higher Qualification:
9. Subjects handled:
10. Experience in Years: 
11. Any other information:

Declaration: The information provided is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the programme and shall attend the course for the entire duration. This application (hard copy) must be forwarded through the Head of the Institution/Department to the Coordinator by 15.11.2019.

Date: Signature of the Candidate
Head of the Institution/Department with Seal
## Schedule Plan:

<table>
<thead>
<tr>
<th>Dates</th>
<th>10:00 AM to 11:30 AM</th>
<th>11:30 AM to 12.00 PM</th>
<th>12.00 PM to 1.30 PM</th>
<th>1.30 PM to 2:30 PM</th>
<th>2:30 PM to 4.00 PM</th>
<th>4:15 PM to 4:45 PM</th>
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</thead>
<tbody>
<tr>
<td>Day – I</td>
<td>Registration and Inauguration</td>
<td>High Tea</td>
<td>Session 1 3D Printing: A Game Changer Technology Dr. Y. Ravi Kumar, NITW</td>
<td>Lunch</td>
<td>Session 2 Solid Modelling and 3D Printing File Formats Prof. L. Krishnanand, NITW</td>
<td>Tea</td>
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<td>Day – II</td>
<td>Session 3 Hands-on Laboratory Session on Solid Modelling and STL Files (NITW CAD/CAM Lab.)</td>
<td>Tea</td>
<td>Session 4 STL File Correction and 3D Printing Software Dr. Y. Ravi Kumar, NITW</td>
<td>Lunch</td>
<td>Session 5 3D Printing Processes I: Polymer Printing Prof. A. Kumar, NITW</td>
<td>Tea</td>
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<td>Day – III</td>
<td>Session 6 3D Printing Processes II: Ceramic Printing Dr. Y. Ravi Kumar, NITW</td>
<td>Tea</td>
<td>Session 7 Hands-on Laboratory Session on Build-setup Preparation (NITW 3D Printing Lab.)</td>
<td>Lunch</td>
<td>Session 8 3D Digitization and Reverse Engineering Prof. A. Venugopal, NITW</td>
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<td>Day – IV</td>
<td>Session 9 3D Printing Processes III: Metal 3D Printing Prof. A. Kumar, NITW</td>
<td>Tea</td>
<td>Session 10 Medical Case Studies of 3D Printing Dr. Y. Ravi Kumar, NITW</td>
<td>Lunch</td>
<td>Session 11 Hands-on Laboratory session on 3D Printers (NITW 3D Printing Lab.)</td>
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<td>Day – V</td>
<td>Session 12 Standards and Standardization of 3D Printing Prof. L. Krishnanand, NITW</td>
<td>Tea</td>
<td>Session 13 3D Printing in Rapid Tooling Industrial Applications Dr. Y. Ravi Kumar, NITW</td>
<td>Lunch</td>
<td>Session 14 Future Perspectives of 3D Printing Dr. G. Jagan Reddy, DMRL, Hyderabad</td>
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