1. Name of the department: Mechanical Engineering

2. Department Profile with infrastructure and facilities

(I) Brief introduction:
One of the basic and largest departments of the Institute, the department of Mechanical Engineering offers Ph.D programme, two M.Tech. courses, two B.E. courses, and five Integrated Certificate Diploma courses (ICD), covering various areas of Mechanical Engineering. NBA has accredited the academic programmes (PG and earlier the 03 year B.E.). Entry into 1st year of 4-year undergraduate program is through JEE (main) examination and M. Tech programs is through CCMT whereas that into ICD programs, 2nd year of 4-year undergraduate program and Ph.D. program is through the SET examination- a national level entrance examination conducted by the institute. In addition to these, scholars under NDF scheme of AICTE are also admitted into the department for carrying out Ph. D. level research. The department has well equipped laboratories with state of the art equipment, instrumentation and software.

A SLIET Mechanical Engineering Society (SMES) exists in the Department. The Society conducts various activities like lectures, student competitions and Industrial visits at regular intervals.

(II) Course offered:

POST GRADUATE PROGRAMME

a. Manufacturing Systems Engineering
b. Welding and Fabrication

DEGREE PROGRAMMES

a. Mechanical Engineering (2019 batch onwards)
b. Mechanical Engineering (Manufacturing Engineering) – for old batches
c. Mechanical Engineering (Welding Technology) – for old batches

INTEGRATED CERTIFICATE CUM DIPLOMA PROGRAMMES

a. Diploma in Mechanical Engineering (Certificate in Foundry and Forging)
b. Diploma in Mechanical Engineering (Certificate in Tool and Die Technology)
c. Diploma in Mechanical Engineering (Certificate in Air-conditioning Mechanic)
d. Diploma in Mechanical Engineering (Certificate in Welding)
e. Diploma in Mechanical Engineering (Certificate in Auto & Farm Equipment Mechanic).

(III) Laboratories in the department:
- Advanced Welding Laboratory
- Metrology Laboratory
- CAD/CAM Laboratory
- Simulation Laboratory
3. Research Publications
   a. Web of Science indexed Journals


b. Scopus Indexed Journals (Excluding Web of Science):
   Author(s), Title, Name of Journal, Vol, Month, Yr, pp

c. Other peer reviewed Journals


xiv. Shaninder Kumar, Rajesh Kumar, Rakesh Kumar, “Experimental study on process parameters of tungsten inert gas (TIG) welded AL6063/SiCp metal matrix composites” International journal for research in applied science & engineering technology, Vol. 6(10) 2018.

d. Full Paper in International conferences
   Author(s), Title, Name of conference, Month, Yr, pp

ix. Mukesh Kumar, Manisha Kumari, Deenbandhu Kumar and Kulwant Singh, “Development of exothermic flux for enhanced metal deposition rate, penetration and reinforcement in submerged arc welding” Proceeding of International Conference on Advancement in Engineering and Technology (ICAET-2019) held at BGIET, Sangrur, during March 15-16, 2019, pp 193-197


xvi. Arvind Jayant, Shweta Singh “An Integrated Approach with MOORA, SWARA, and WASPAS Methods for Selection of 3PLSP" presented in the International Conference ICIEIND 2018, organized by IIIE Odisha Chapter, in collaboration with Siksha ‘O’ Anusandhan (Deemed to be University) during 27th to 30th September 2018, Campus 1 (ITER), Bhubaneswar, Odisha.

xvii. Janpriy Sharma, Arvind Jayant “Design of Multi echelon supply chain network in manufacturing environment: A Simulation Study” presented in the International Conference ICIEIND 2018, organized by IIIE Odisha Chapter, in collaboration with Siksha ‘O’ Anusandhan (Deemed to be University) during 27th to 30th September 2018, Campus 1 (ITER), Bhubaneswar, Odisha.


xix. Sumit. Saini, Shankar Singh, K. Singh, A. Singh “Some studies into weldability of rice husk ash aluminium matrix composites using TIG welding (paper ID 57)”, International Conference on Advances in Materials and Manufacturing Applications-IConAMMA 2018,
Amrita Vishwa Vidyapeetham University Campus, Junnasandra, Carmelaram, Kasavanahalli, Bengaluru, Karnataka 560035 (16-18 August, 2018).


4. Other publications:
   a. Book Chapters
      Author(s). Title of chapter. Name of Book, Publisher. Year. ISBN no.


5. **Expert lectures organized**:
   1. Expert lecture on 13th June 2019 by Prof. Noé G. Alba-Baena, Department of Industrial and Manufacturing Engineering, Universidad Autonoma de Ciudad Juarez (Autonomous University of Juarez City) on Nano Composite Processing was organized in Mechanical Engineering Department, SLIET, Longowal under TEQIP-III (Coordinated by: Anil Kumar Singla and Anuj Bansal)
   2. An expert lecture on “Properties & Applications of Smart Lubricants” was delivered by Prof. Vijay Kumar Sukhwani, Government Engineering College, Ujjain, on 4th February 2019 in Department of Mechanical Engineering. Prof. Rajesh Kumar and Prof. Ravinder K. Saxena coordinated the activity.
   3. An expert lecture on “Laboratory Safety” was delivered by Captain Anil Kumar (Retd.) Indian Navy now heading Training and sourcing Tenon Group of Company, New Delhi on 18th January, 2019 in Department of Mechanical Engineering. Dr. Indraj Singh, coordinated the activity.
   4. An expert lecture on “Latest trends in welding” was delivered by Er. Honny Garg, Senior Engineer, ISGEC, Yamunanagar, Haryana on 31st October, 2018. Prof. Kulwant Singh and Mr. Navneet Goyal coordinated the activity.
   6. A motivational lecture was delivered by Er. Digant Kumar, Dy. Manager, HMEL Refinery on 4th October, 2018. Dr. Manoj Kumar and Mr. Navneet Goyal coordinated the activity.
   7. An expert lecture on “Quality of Welding Electrodes” was delivered by Er. Sanjay Parmar, Quality Control Engineer, Adani Electrode on 31st October, 2018. Prof. Kulwant Singh and Mr. Navneet Goyal coordinated the activity.
   8. The experts from GATEFORUM, Chandigarh have delivered Technical Lecture and interacted with students for preparation of GATE 2019 Examination on 10th October, 2018. Prof. Kulwant Singh coordinated the activity.
   9. An expert lecture on “Balance between Stress and Excellence in Life” was delivered by Dr. Navneet Arora, Professor, Department of Mechanical and Industrial Engineering, IIT Roorkee on 06 September, 2018. Prof. Kulwant Singh coordinated the activity.
   10. Career Counselling in Auto CAD & Solid Works was organized in the Mechanical Engineering Department on 29 August, 2018. Expert lectures were delivered by Mr. Simranjeet Singh Bains (Regional Manager) and Mr. Arun Choudhary (Technical Manager) Autodesk, Chandigarh. Prof. Rajesh Kumar coordinated the activity.
   12. Sh.Sanjay Kumar Hans, Manager-Cold Chain Project Design Services and Technical Training, Emerson Commercial and Residential solutions, Noida delivered specialized
lecture, “Current Industrial Standards and practices available in market HVAC” on 16 May 2018. Er. Sumit Kumar, and Er. Ankita Omer, Coordinated the activity.
13. An expert lecture on “Latest Trend in Manufacturing of Railway Coaches” was delivered by Er. S. S. Monga, Works Manager, RCF, Kapurthala on 24 April, 2018. Prof. Kulwant Singh coordinated the activity.

6. Research projects awarded during the year/वर्ष के दौरान प्राप्त की अनुसंधान परियोजनाएं:

<table>
<thead>
<tr>
<th>S No</th>
<th>Name of Faculty (Principal Investigator)</th>
<th>Name of the Funding agency</th>
<th>Title of the Project</th>
<th>Sanctioned order no.</th>
<th>Sanctioned date</th>
<th>Amount Received (In figures)</th>
<th>Amount received (in words)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rajesh Kumar (Prof. ME)</td>
<td>AICTE</td>
<td>Development of fault identification system for water turbine making use of vibration signal and artificial intelligence</td>
<td>Sanction Letter Ref. No.: 8-29RIFD/RPS-NDF/POLICY-1/2018-19</td>
<td>18/03/2019</td>
<td>Rs. 17,00,000/-</td>
<td>Seventeen Lac</td>
</tr>
<tr>
<td>2.</td>
<td>Surinder Kumar, A.P (ME)</td>
<td>TEQIP-III (Sub component: 1.3.2.5)</td>
<td>Tribological investigation of synthesized nanoparticles based composite lubricant.</td>
<td>Sanction Letter No.: SLIET/Dean (R&amp;C)/2019/693</td>
<td>26/03/2019</td>
<td>Rs. 1,00,000/-</td>
<td>One lac only</td>
</tr>
<tr>
<td>3.</td>
<td>Anuj Bansal, A.P (ME) &amp; Co-PI: Jonny Singla, A.P. (ME)</td>
<td>TEQIP-III (Sub component: 1.3.2.5)</td>
<td>Design and development of Cavitation test rig to analyse the cavitation erosion of Hydro-machinery steels under surface modifications</td>
<td>Sanction Letter No.: SLIET/Dean (R&amp;C)/2019/693</td>
<td>26/03/2019</td>
<td>Rs. 1,00,000/-</td>
<td>One lac only</td>
</tr>
</tbody>
</table>

7. Conference/STTP/STC/FDP/Workshops/Seminars Organized by the department/

<table>
<thead>
<tr>
<th>S No</th>
<th>Name of the program</th>
<th>Duration</th>
<th>No of participants</th>
<th>Sponsoring Agency if any</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Technology Day Event (Workshop)</td>
<td>One Day, 7th February 2019</td>
<td>40</td>
<td>-</td>
<td>Co-ordinated by the Prof. Rajesh Kumar, HOD(ME) and Prof. Ravinder K. Saxena</td>
</tr>
</tbody>
</table>
Recent Trends in Mechatronics and Robotics (RTMR-2018) (STC)  
35  
TEQIP III  
Coordinated by Dr. Sunil Kumar and Dr. Vivek Kumar

Energy Efficient Building Materials (Workshop)  
One day, 29 Oct. 2018  
111  
PEDA and BEE  
Chairmanship of Prof. Rajesh Kumar HOD(ME), Convener Dr. Indraj Singh, Coordinator Mr. Sumit Kumar, Co-coordinator Dr. Sunil Kumar

Solid Works (Workshop)  
One day, 30 Sep. 2018  
136  
SMES Mechanical Engg.  
SLIET  
Coordinated by Mohammad Majid

8. Training Programmes held for teachers and staff/

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the program</th>
<th>Duration</th>
<th>No of participant(s)</th>
<th>Sponsoring Agency if any</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Training on Digital Micro Vickers Hardness Tester</td>
<td>One Day 28.06. 2019</td>
<td>20</td>
<td>Self</td>
<td>Radical Scientific Equipment Pvt. Ltd, for department faculty/staff. The program was organized by Rakesh Kumar, Associate Professor (ME).</td>
</tr>
</tbody>
</table>

9. Linkage with industry

Time to time faculty members visit industries for discussion of issues related to industrial problems, training and placement of the students.

Faculty members of the department visited Chamber of Industrial and Commercial Undertakings (CICU), Ludhiana on 7th of June 2019 and met its General Secretary and MD of M/s New Swan Industries, Mr. Upkar Singh Ahuja,

Industrial visits for the students are also organized.

i. An employability Skill test for Mechanical engineering students under TEQIP-III was organized during 15th-18th Oct.2018. The event was coordinated by Dr. Indraj Singh

ii. The Students of GME 2016 Batch went for an industrial visit at the Shreyans Industries Ltd. Ahmedgarh on 15 May 2018. Faculty of the department Dr. Manoj Goyal and Mr. Jonny Singla accompanied the students.

iii. The Students of GWT 2015 visited Rail Coach Factory, Kapurthala on 12 May 2018. Dr. Manoj Goyal accompanied the students.

iv. The Students of PGWLF-17, GWT-16, and GWT-17 visited ISJEC, Yamunanagar on 4 May 2018. Mr. Navneet Goyal and Mr. Vijander Singh accompanied the students.

10. Collaborative activities
1. One week short term course on “Research Methodology” sponsored by TEQIP-III was jointly organized by Mechanical Engineering Departments of NIT Uttarakhand, MNIT Jaipur and SLIET Longowal from 27th May to 31st May 2019.


3. ISHRAE student chapter was started in collaboration with ISHRAE Chandigarh Chapter on 12/10/2018. Sh. Sumit Kumar and Ms. Ankita Omer shall act as Faculty Coordinators.

11. Curricular achievement & Co-curricular achievement
   i. Activities held by IEI, Kolkata-SLIET Students Chapter (Diploma) under guidance of Faculty advisor Mr. Rakesh Kumar. (01 April 2018-31 March 2019)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Events Organized</th>
<th>Dated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Poster Competition on Art &amp; Craft</td>
<td>21-04-2018</td>
</tr>
<tr>
<td>2.</td>
<td>Cultural Events</td>
<td>08.05.2018</td>
</tr>
<tr>
<td>3.</td>
<td>Certificate Distribution Ceremony</td>
<td>08.052018</td>
</tr>
<tr>
<td>4.</td>
<td>Lecture on CAD Craft Simulation Software</td>
<td>11.05.2018</td>
</tr>
<tr>
<td>5.</td>
<td>Technical General Knowledge Quiz</td>
<td>13-8-2018</td>
</tr>
<tr>
<td>6.</td>
<td>Technical General Science Quiz</td>
<td>14-8-2018</td>
</tr>
<tr>
<td>8.</td>
<td>Cultural Events</td>
<td>28.09.2019</td>
</tr>
<tr>
<td>9.</td>
<td>Group Discussion</td>
<td>30.09.2018</td>
</tr>
<tr>
<td>10.</td>
<td>Technical Fun Games</td>
<td>30.09.2018</td>
</tr>
<tr>
<td>11.</td>
<td>Swachh Bharat Abhiyan (PPT)</td>
<td>02-10-2018</td>
</tr>
<tr>
<td>12.</td>
<td>Swachh SLIET Abhiyan</td>
<td>02-10-2018</td>
</tr>
<tr>
<td>13.</td>
<td>Bharat Scouts &amp; Guides</td>
<td>10.10.2018</td>
</tr>
<tr>
<td>14.</td>
<td>Mathematician Athletic</td>
<td>19.01.2019</td>
</tr>
<tr>
<td>15.</td>
<td>Treasure Hunt</td>
<td>23.02.2019</td>
</tr>
<tr>
<td>16.</td>
<td>Max Hospital Health Camp Assisted at Sangrur</td>
<td>24.02.2019</td>
</tr>
<tr>
<td>17.</td>
<td>Truth-lie &amp; Balloon Race</td>
<td>02.03.2019</td>
</tr>
</tbody>
</table>

   ii. Inauguration Ceremony of “Wall of Kindness”

Happy club launched new project named “WALL OF KINDNESS” in SLIET campus on 28.02.2019. Hon’ble Director inaugurated WALL OF KINDNESS in Faculty Club.
A little effort can make a difference, and Wall of Kindness is a unique design to unify us with our brothers and sisters who need our help. Wall of Kindness project is a charity work phenomenon and a kind of welfare aimed at encouraging people to donate miscellaneous useful things.

If you don't need it, leave it,
If you need it, take it.

12. Any other salient achievements by faculty/staff/Research scholars/students

a) Awards/Prizes won by students and faculty

i. EFFICYCLE- 2018

Team “Green Rangers 2018” under guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor, fabricated a three-wheeled hybrid human powered vehicle and participated in “Efficycle 2018” - a student competition conducted by Society of Automotive Engineers Northern India section (SAE-NIS) organized during 09-13 October 2018 at Lovely Professional University (LPU), Jalandhar. The team bagged Overall Winner and got a cash award of ₹1 Lakh in addition to Durability Winner (prize money - ₹30,000); Cost Award (prize money - ₹20,000) and Drive Excellence Award (Prize Money - ₹10,000). Abhijeet Singh, Umer Jameel and Iqbal Singh led the team as its Captain, Vice-Captain and facilitator respectively.

ii. BAJA SAE INDIA 2019

Team “Junkyard Warriors” consisting of 19 members under guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor (FA) fabricated a four-wheeled single-seater all-terrain vehicle (ATV) and participated in Baja SAE India 2019 organised during March 06 –10, 2019 at Indian Institute of Technology (IIT), Ropar (Punjab). The Team led by Abhishek Tiwari as its captain and Arshvir Singh Sidhu as driver and its Vice-captain displayed highest 40 laps in the endurance race of four hours. The team bagged the ‘Durability Award’ and ‘Pride of Punjab’ award (Punjab & Chandigarh) along with cash prize.
iii. INTERNATIONAL GO-KART CHAMPIONSHIP- 2019
The team ‘Juggernauts’ consisting of 20 students of the department under guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor fabricated the Go-Kart and participated in International Go Kart Championship (IGC - 2019) held during 15-18 March 2019 at Lovely Professional University, Jallandhar. The team bagged ‘Best Build Quality Winner’ in addition to Runnerup Overall Championship’s Winner Trophy and Endurance 1st Runner Up Trophy along with cash prizes.

iv. EGVC 2019
The team “Green Rangers 2019” under guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor fabricating a three-wheeled hybrid human powered vehicle and participated in “EGVC 2019”- a student competition by Society of Automotive Engineers Western India section (SAE-WIS) held during 03-06 April, 2019 at LD College of Engineering, Ahmedabad. The team bagged Overall Winner of EGVC...
2019 in addition to Endurance Winner; Maneuverability Award and Best Design Runnerup Award.

v. Mr. Jastej Singh, Ph.D. Scholar working under the supervision of Dr. A.S. Shahi, Deptt. of Mechanical Engineering participated in AWSAR (Augmenting Writing Skills for Articulating Research) 2018- a National competition organized by the Department of Science and Technology (DST), Government of India. His research story entitled “Welding research: Effect of joint design on the corrosion resistance of welds” was selected among the 100 selected stories (ranked 33rd) and won a cash prize of Rs.10,000/- along with a certificate as consolation prize in the Popular Science Writing on National Science Day, 28th February, 2019.

b) Any other
i. 1st edition of National Level Social Festival (Social Fest-2019) on the theme “Engage, Motivate & Empowerment of Youth” was organized during April 11-13, 2019. It was aimed at instilling a sense of responsibility towards the society among the youth by display of various events, exhibitions, lectures, workshops and competitions organized in the festival under chairmanship of Dr. Arvind Jayant, Associate Professor (Mechanical Engineering).
ii. **Nipun Rover Testing Camp organized by Bharat Scouts & Guides**  
**Coordinator (BSG): Jonny Singla**

A team of 47 students led by Coordinator (BSG) Mr. Jonny Singla, AP (ME) and Mr. Sunil Bansal, AP (EIE) participated in Nipun Rover testing camp organized by Bharat Scouts & Guides, Punjab during the period on and from March 17-21, 2019 at Baba Hardyal Singh, Natural Re-treat Park, Sheilgaon (H.P.). The students grouped into 8 crew teams named after martyrs and freedom fighters were made aware of camping rules, service to humanity, duty, punctuality and sanitation etc. through display of events like trekking, knot preparation, first aid and gadget during rescue operation, campfire, prayer, flag song, and crew leader meeting etc.

![Trekking event](image1.jpg) ![A scene of rescue operation](image2.jpg)

iii. **National Voter's Day**

National Voter's Day was celebrated on 25th January 2019 in Department of Mechanical Engineering. The complete procedure for registration as a voter was explained by the experts. Prof. Kulwant Singh coordinated the activity.
iv. The students of final year Mechanical Engineering attended GATE coaching during 17 December, 2018 to 04 January, 2019 conducted by the GATE Coach, New Delhi at SLIET Longowal under TEQIP-III.

v. Prof. Shankar Singh of Mechanical Engineering department was selected to teach AT73.17 (Advanced Material Science for Design & Manufacturing) at Asian Institute of Technology (AIT), Bangkok, Thailand, for a period of 16 weeks during August 2018 semester. The sanction was conveyed vide Office Order F.No.19-1/2018-TS.VII, Dt. 16-07-2018, issued by the Under Secretary to the Govt. of India.

vi. Mr. Rakesh Kumar coordinated the laboratory experimentation of 06 AMI sponsored students from 1st to 7th July 2018.

vii. Dr Shankar Singh, Professor (Mechanical Engineering) delivered an expert lecture on “Advance Machining Technologies in Automotive Industry” at AICTE-ISTE sponsored, six Days Induction/Refresher/Faculty Development Programme (14th to 19th May 2018) at Gulzar Group of Institutes, Ludhiana.

viii. Dr. Rajesh Kumar, Professor & Head of Mechanical Engineering Department delivered an expert lecture on “Preventing Plagiarism, and various software’s for checking Plagiarism” in the one week short term course on “Research Methodology” at NIT Jaipur, sponsored by TEQIP-III and Jointly organized by Department of Mechanical Engineering, NIT Uttarakhand, MNIT Jaipur & SLIET Longowal 30th May 2019.

ix. Mr. Anil Singla, delivered an expert lecture on “Handling of Reference” in the one-week short term course on “Research Methodology” sponsored by TEQIP-III and Jointly organized by Department of Mechanical Engineering, NIT Uttarakhand, MNIT Jaipur & SLIET Longowal 30th May 2019.

x. Dr. Rajesh Kumar, Professor & Head of Mechanical Engineering Department, is Evaluator of STTP proposals of AICTE under AIQS.

xi. Dr. Rajesh Kumar, Professor & Head of Mechanical Engineering Department, has been nominated as Member of the Expert Advisory Group on Device Development Programme of Department of Science and Technology (DST), Government of India.

xii. Dr. Raj Kumar Yadav, Associate Professor (Mechanical Engineering) is a member of editorial board of ‘Sahitya Parivar’ (ISSN 2250-1495)— a Hindi Magazine.

xiii. Dr. Raj Kumar Yadav, Associate Professor (Mechanical Engineering) delivered expert lectures on ‘Applied Thermodynamics’ during the period on and from April 15-16, 2019 at NIT, Uttarakhand (Satellite Campus at MNIT, Jaipur).