SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY

(Deemed-To-Be-University) LONOGOWAL-148106

ACADEMIC AUDIT (2023 - 2024)

PROFORMA OF ASSESSMENT

- 1. Name of the Department : Mechanical Engineering
- Reviewer (Name, Designation & Address): Dr. Hari Singh, Prof. & Head (ME) NIT, Kurukshetra
- Date of Review: 21.02.2025

NOTE:

- Please grade in the box provided for the following parameters in the range of 1-10 with 10 being the highest.
- Leave 'blank' for 'No Comment'. ii.
- iii. Kindly give your opinion on the strength and weakness of the Department and your suggestions for future growth.

ACADEMICS

ICD P	Sci	Score		
A.1 ICD Programme	Self- assessment	Expert assessment		
 Curriculum (Structure, Course Syllabi, Flexibility), Theory/ prac (contents/ratio). 	etical 10	10		
Equivalence and Relevance of curriculum at national level	10	10		
 Formal Academic Load on Students [Teaching, Laboratory/Practical, Projects(minor/major)] 	10	10		
Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	10	10		
 Tour/Training/Industrial visits/Internship opportunities provided during the year 	10	08		
 Effectiveness of Assisted Learning, Tutorial System for ICD Students/ Seminars (Refer Course File) 	10	10		
7. Faculty Mentoring/Faculty Advisor System for Students/Class Students	of 10	10		
 Practical activities, non-academic and totally related to a speci trade for skill development and developing expertise in a particular group of techniques. 	ific 08	08		
 Linkage of ICD programs to outcome based vocational educat (Industry linkage) 	tion 10	08		
 Availability of workshop type lab/laboratory for providing hand training to the students for skill development 	on 10	10		
Total Score (out of	100) 98/100	94/100		

Prof. Sanjeev Bansal, (M&II)

Prof. S. M. Ahuja, (ChE) Prof. K.K. Saxeha.

HOD (ME) & Convener

Prof. Hari Singh. 21 02 13

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		Sc	ore
A.2	UG Programme	Self- assessment	Expert assessment
1.	Curriculum (Structure, Course syllabi, Flexibility, Choice based credit system)	10	10
2.	Status of study material developed by faculty for students	10	08
3.	Relevance of contents of courses taught to the students and scope of improvement (revision of syllabus, addition of new experiments)	10	10
4.	Formal academic load on students [Teaching, Laboratory/Practical, Projects(minor/major)]	10	10
5.	Modern teaching methods in practice other than the conventional methods E-Assisted Learning (i) Availability of Library Resources (ii) Multi-Media Assisted Teaching	10	08
6.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation) (i) Theory and tutorial (ii) Practical (case studies)	10	10
7.	ner u -let is fixed for the	10	10
8.	Tour/Training/Industrial visits/Internship opportunities	10	10
	(a) Effectiveness of Assisted Learning in Tutorial classes/seminars for Students		08
	(b) Faculty Mentoring/Faculty Advisor System for Students/Class of Students	10	
0	Placement %age/higher studies options (last three years)	08	08
_	Total Score (out of 100)	98/100	92/100

Prof. Sanjeev Bansal, (M&II)

Prof. S. M. Ahuja, (ChE) Prof. R. K. Saxena, (ME) Prof. Navdeep

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		S	core
A.3	PG Programme (Separate for each programme)	Self- assessment	Expert assessment
1.	Curriculum (Structure, Course Syllabi, Flexibility)	10	10
2.	Formal Academic Load on Students [Teaching, Laboratory/Practical, Projects (minor/major)]	10	08
3.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	10	10
	Relevance of contents of courses taught to the students and scope of improvement	10	10
5.	Modern teaching methods in practice other than the conventional method E-Assisted Learning i. Availability of Library Resources and Major Search Engines (like Scopus, Web of Science) ii. Multi-Media Assisted Teaching	10	08
6.	Technical Societies/ Colloquium for Students i. Departmental Society ii. Student Chapter(s) of Professional Societies		(1.554
7.	Tour/Training/Industrial visits/Internship opportunities		-
8.	Collaboration with other departments (within institute)		
9.	Faculty Mentoring/Faculty Advisor System for Students/Class of Students	10	10
10.	Monitoring and continuous evaluation of the project work assigned to the students (mechanism)	10	10
	Total Score (out of 100)	70/70 100/100	66/70 94/100

A.4	Doctoral (Dk D) B	Sc	ore
1.	Intake of Ph.D. Students	Self- assessment	Expert assessment
- 200	The state of the s	02	02
2.	Admission Process	10	10
3.	Pre-Ph.D. Courses and Evaluation Process	10	10
4.	Breadth and Depth of Knowledge of Students	08	08
5.	Seminar/ Presentations and Technical Communication	10	
6.	Research Facilities available in the Department		10
7.	Average No. of Research Students/Faculty	10	10
8.	Average No. of Research Papers of Ph. D. Students (Indexed		
_	Journals)	06	06
9.	Average Duration to Complete Ph.D. (years)	00) (3876)
10.	Participation of Research Scholars in Conferences/Workshops	06	06
		10	10
	Total Score (out of 100)	72/90 80/100	72/90 80/100

Prof. Sanjeev Bansal, (M&II) Prof. S. M. Ahuja, (ChE) Prof. K. Saxena, (ME) Prof. Navdeep

Prof. Shankar Singh, HOD (ME) & Convener

Prof. Hari Singh. External Expert

B. RESEARCH

		Score		
B.1	Research and Industrial collaboration	Self- assessment	Expert assessment	
1.	Research Ambience in the Department	10	10	
2.	Research Awareness among Doctoral Students	10	10	
3.	Thrust areas of research in the department	10	10	
4.	Quality of Research			
5.	Collaborations with other departments (within the institute) and at National, and international levels.	10	08	
6.	Impact and Quality of Publications	10	10	
7.	Relevance of Research to Knowledge Generation and Social Relevance		08	
8.	Student Exposure for Attending Quality Conferences/Symposia	10	08	
9.	Inter departmental collaborations	10	10	
0.	Industry/externally funded sponsored research. (Numbers and amount)	00	. 00	
	Total Score (out of 100	80/90 89/100	74/90 82/100	

- 1. Plan of action of the department for the next five years (in view of NEP 2020):
 - a) More emphasis to be laid down on Skill development courses.
 - b) Setting up of two "Centers of Excellence" in (i) Materials processing & Characterization (ii) Material testing & Evaluation Centre
 - c) On Job training (OJT) to be offered in the department especially in the following areas:
 - (i) Welding (ii) CNC machining (iii) Product fabrication (iv) Material testing
 - d) Software training modules on Software like Auto-CAD, ANSYS, Solid works, Pro-E, CATIA etc. to be developed as a part of in-house training as per the curriculum requirements.
 - e) Externally funded/Sponsored research projects by the faculty would be submitted by the faculty of the department.
 - f) International and National conferences would be planned.
 - g) FDP, STC, Workshops/Seminars (at least twice every year) would be organized.
 - h) Collaborative research especially in the thrust areas would be focused.
 - i) Interdisciplinary research with other departments would be planned with special focus on UG, PG and Ph. D. projects.

Prof. Sanjeev Bansal, (M&II) Prof. S. M. Ahuja, (ChE

Prof. Mari Singh. External Expert OF K.K. Saxena, (ME) Prof. Nav

2. Significant achievements of department

Name Of Faculty	/granted/published Patent/ application Number	Title of the patent	Year of Awar d of patent	Date of filing/ granting / publishing /licensing	Status of Patent (Filed/ Granted/ Published/ Licensed)
Dr Shankar Singh	4077/MUM/2015	Regenerative Electromagnetic Shock Absorber (Patent No: 516990)	2024	28/02/2024	Granted (for the term of 20 years)
Dr. Rakesh Kumar and Others	6333642	High Gain Electromagnetically Coupled Patch Antenna for Point- to-Point wireless communication links.	2024	02.01.2024	Granted
Dr. Rakesh Kumar and Others	6346321	A compact High Gain Antenna for 3.6-3.8 GHz Band with Thermal Management	2024	21.02.2024	Granted
Dr. Mohd Majid and Others	413073-001	Artificial intelligence based chemical industrial grinder machine	2024	09-04-2024	Granted
Dhiraj Sud Anil Kumar Singla Anuj Bansal	202011034056	A Portable Apparatus for Cleansing Fruits and Vegetables and Method Thereof	2024	1	Granted
Anuj Bansal, Jonny Singla, Anil Kumar Singla, Deepak Kumar Goyal, Jagtar Singh	202211037172	A Portable Mud Based Curvy and Cone Heat Sinker System for Outdoor Air Conditioner Unit	2023		Published

S No	Name of the program	Duration	No of participants	Sponsoring Agency if any	Name of Organizer (s)
1	One- week training workshop on "Basics of Solidworks and its Applications"	16/10/2023 to 20/10/2023	31	SLIET Longowal	Dr. Mohd Majid
2	Organized one week workshop on "Finite Element Analysis Using Ansys"	28/10/2023 to 29/10/2023 & 04- 11-2023 to 05-11- 2023	70	SLIET Longowal	Dr. Mohd Majid
3	STTP on Design of Experiments and its application in Engineering	04th to 08th December 2023		SLIET Longowal	Anuj Bansal
4					Anuj Bansal
	Recent Trends in Additive Manufacturing (RTAM-2023)	December 18-22, 2023	91	SLIET Longowal	Anil Kumar Singla
					Jonny Singla
					Divesh Bhar

5	One Week Short Term Course (Hybrid Mode) on Advancements in Material Processing and Additive Manufacturing (AMPAM 2024) by the Department of Mechanical Engineering, SLIET, Longowal	8th -12th January 2024	105	SLIET Longowal	Dr Shankar Singh
6	Organized an expert lecture on "Smart Materials for Light Weight and Flexible Transducers"	14-02-2024	50	SLIET Longowal	Dr. Mohd Majid
7	A short-term course on Finite element analysis using Ansys and solid works.	24-04-2024 to 01- 05-2024		SLIET Longowal	Vivek Kumar Sumit Kumar
8	National Conference on Advanced and Emerging Materials for Technological Applications (AEMTA)	15th to 16th March 2024		SLIET Longowal	Anuj Bansaî Jonny Singla Anil Kumar Singla

Training programmes held for students.

S No	Name of the program	Duration	No of participants	Sponsoring Agency if any	Name of Organizer (s)
١.	Entrepreneur Awareness Program	28-29 Feb,2024	60	Pre-fest event of TechFEST-24 SLIET and GENESIS	Dr. Rakesh Kumar Coordinators and Dr Sanjeev Bansal, Dr. Manoj Goyal Co-coordinator
2.	One day Seminar on Dr Sarvepalli Radhakrishnan	05.09.2024	80	IEI-SLIET Student Chapter and Department of Mechanical Engineering	Dr. Rakesh Kumar Coordinator
3.	One-day workshop on birth anniversary of renowned Indian Civil Engineer Dr. Mokshagundam Visvesvaraya	15.09.2024	65	IEI-SLIET Student chapter and in association with ISTE Student chapter	Dr. Rakesh Kumar and Dr. Harish Arya, Coordinator
4.	Project Execution: Conceptualization, Presentation and Report Writing	One Day 13th March, 2024	160	5.52 A	Prof. Indraj Single Convenor Dr. J S Gill Coordinator Dr. Sunil Kumar Coordinator Dr. Anuj Bansal Co-coordinator Er. Divesh Bhar Co-coordinator
Sanjee	Bansal, (M&H) Prof. Prof. Hat/Singh. 21.0 External Expert	S. M. Ahuja, (C	ChE) Proper R. R. Saxer	Prof. Navdeep	udal shaper

5	Skill Training in "Auto CAD"	27th Feb. 2024 to 1st March 2024	30 Students of 6th and 8th Class of Institute Innovation Call and Jawahar Navodya Vidyalaya Longowal	Institute Innovation Call and Jawahar Navodya Vidyalaya Longowal	Dr. A S Shahi Dr. Sunil Kumar Mr. M.L. Dhiman Mr. Nikesh Kumar Ojha
6	Skill Training in "Auto CAD"	4th March 2024 to 7th March 2024 to	30 Students of 6th and 9th Class of Institute Innovation Call and Jawahar Navodya Vidyalaya	Institute Innovation Call and Jawahar Navodya Vidyalaya Longowal	Dr. A S Shahi Dr. Sunil Kumar Mr. M.L. Dhiman Mr. Nikesh Kumar Ojha

S. No.	Name of faculty member	Topic of delivered lecture/ expert lecture	Event Name	Organizer	Date/ Year of the event
1	Anuj Bansal	Challenges in development of Aluminum and Titanium alloy components using WAAM	one-week FDP on "Recent Trends in Additive Manufacturing - 2023 (RTAM-2023)	SLIET Longowal	22nd Dec 2023
2	Anuj Bansal	outcome based education	Department of Mechanical Engineering, SLIET Longowal	SLIET Longowal	16th and 17th August 2023
3	Sumit Kumar	Project writing: conceptualization, presentation & report writing	Department of Mechanical Engineering, SLIET Longowal	SLIET Longowal	13-Mar-24
4	- J.S.Gill	Project writing: conceptualization, presentation & report writing	Department of Mechanical Engineering, SLIET Longowal	SLIET Longowal	13-Mar-24
5	J.S.Gill	Fundamental Rights and duties of citizen of India	Constitution Day, SLIET Longowal	SLIET Longowal	26th November, 2024

e. Consultancy projects received during the year.

Name of the consultant	Name of consultancy project	Consulting/ Sponsoring agency with contact details	Year	Revenue generated (INR in Lakhs)
Dheeraj Sood, Anil Singla, Payal Malik	Chemical and Performance analysis of Industrial Samples provided	Amber Paints, Industrial Area Ludhiana	2024	₹ 59000/-

f. PhD Submitted/Awarded to students.

S No	REGN. NO.	Name of the scholar	Name of the guide/s	Year of award	
1	PME 1504	Surinder Kumar	Dr. Rajesh Kumar	17.10.2023	
2	PME 1508	Yogeshwar Jasra	Dr. R.K. Saxena	22.11.2023	
3	PME 1602	Gagandeep Singh	Dr. Arvind Jayant, Dr. Kulwant Singh	01.12.2023	
4	PME 1605	Sumit Kumar	Dr. Pardeep Gupta	18.01.2024	
5	PME 1507	Prashant Tripathi	Dr. Shankar Singh	19.04.2024	
6	PME 1802	Praveen Kumar	Dr. Pardeep Gupta, Dr. Indraj Singh	10.05.2024	
7	PME 1604	Vivek Gupta	Dr. Arvind Jayant	20.06.2024	

Prof. Sanjeev Bansal, (M&H) Prof. S. M. Ahuja, (ChE)

Prof. S. M. Ahuja, (ChE) Prof. K. Saxena, (ME)

Prof. Shankar Singh, HOD (ME) & Convener

Jun 31

External Expert

g. List of SQPA to be awarded.

S. No.	of SQPA to be awarded. Name of Ph.D Scholar and Regn. No.	Amount of Award	Supervisor (s)
1.	Vikrant Singh, PME 2123	Rs.10000/-	Dr. Anuj Bansal, Dr. Anil Kumar Singla
2.	Vikrant Singh, PME 2123	Rs.10000/-	Dr. Anuj Bansal, Dr. Anil Kumar Singla
3.	Vikrant Guleria, PME 1801	Rs.5000/-	Dr. P.K. Singh, Dr. Vivek Kumar
4.	Praveen Kumar, PME 1802	Rs.5000/-	Dr. Pardeep Gupta Dr. Indraj Singh
5.	Sumit Kumar, PME 1605	Rs.5000/-	Dr. Pardeep Gupta

h Total number of students qualifying in state/national/international level examinations during the year (e.g.: NET/SLET/GATE/GMAT/CAT/GRE/JAM/TOEFL/Central Services/State Services/Any Other

Year	Names of students	Name of the test Qualified/selected.	Registration number
2024	G. Sai Harsh 2040383	GATE	
	Aman Shukla 2040355	GATE	
	Harsh Kumar 2040410	GATE	

3 Placement record of the department (Last three years): UG students: 2021-22 = 100, 2022-23 = 118, 2023-24 = 115

4. Scope for training of faculty/staff for further strengthening the teaching-learning process for strengthening the curriculum with the addition of new courses having relevance at National and International levels.

attending/online for encouraged would be department trainings/Workshops/Seminars/FDPs/STCs etc. especially pertaining to the topics related to thrust areas of the (i) Faculty in Mechanical Engineering that are largely aligned with the industrial needs. Faculty would also be encouraged to strengthen the existing curriculum besides adding new courses of relevance.

(ii) Technical Supporting staff would be encouraged to have more hands-on learning on various Research and testing equipment, via enhancing their learning through attending/online various workshops/training

programmes held across the country.

5. Effective/Continuous monitoring of faculty/staff in delivery the course contents (at departmental level) for enhancing the teaching-learning process.

Ø Class monitoring committee in the department periodically monitors the conduct of classes as well as quality of delivery of course contents.

- Technical Societies/ Colloquium for Students
 - (i) Departmental Society
 - (a) SLIET Mechanical Engineering Society (SMES)
 - (ii) Student Chapter(s) of Professional Societies
 - (a) Institution of Engineers (India), Kolkata-Student Chapter
 - (b) Indian Society for Technical Education (ISTE) (Faculty and Student Chapter

Scope of improvement in the present teaching – learning process

(i) Teaching-learning process can be further enhanced by delivering course contents through interactive videos related to fundamental as well as applied topics.

(ii) Case studies can be included in the curriculum.

(iii) Industrial visits can be more effectively utilized for identifying research projects/consultancy.

Prof. S. M. Ahuja, (ChE) Prof. K.K. Prof. Sanjee Bansal, (M&II)

Prof. Shankar Singh,

Prof. Hart Singh. External Expert

HOD (ME) & Convener

8. The skill and expertise of the faculty/Technical staff in the department (specific)

Ø Faculty expertise includes areas like

Thermal.

Design,

Manufacturing,

Welding and materials,

Industrial Engineering etc.

9. Strengthening laboratory infrastructure (adding of new equipment's and use of present facility for optimum use)

Laboratory infrastructure has been strengthened as per the plan/need of the department. The present facility is also being optimally used by the students as well as the faculty of the department for catering to the curriculum, project as well as research needs.

10. Any other point:

Specific suggestions by the external expert:

Ø Industrial training should be strictly monitored by the faculty.

Ø Projects should focus more on industry oriented and/or current local problems.

C. Departmental infrastructure

C.1	D	Score		
	Departmental resources	Self- assessment	Expert assessment	
1	Adequacy of Classrooms and Multi-Media Facility	08	08	
2	Availability of Laboratories	09	08	
3	Availability of Conference/Seminar Room, etc.	08	08	
4	Availability of Seating Space for Faculty and Research Students	10	10	
5	Availability of Internet Services in Research Labs and Classrooms	10	10	
6	Departmental Library and E-Resources	10		
7	Computing Facilities and Software		08	
8	Adequacy of Offices and Furnishing for Faculty	10	10	
9	Faculty- Student Ratio	10	10	
10	Support Staff (Technical/Administrative) Adequacy	06	06	
		04	04	
	Total Score (out of 100)	85/100	82/100	

SWOC analysis by the department:

Strengths:

- The department has experienced faculty. More than 70% of the faculty is Ph. D. and their retention rate is also high.
- Laboratory infrastructure is adequate with latest state of art equipment.
- Faculty is motivated towards research and strives to achieve higher quality levels of teachinglearning process.

Weaknesses:

- Institute-industry interaction needs to be strengthened.
- Monitoring of the internship/training of final year students due to involvement in many activities needs to be reviewed.
- faculty to student ratio is low.

Opportunities:

- Sufficient laboratory infrastructure is available in the department to offer vocational courses in different areas like Welding, Machining, Automation, Software training etc. that can help in generating IRG for the institute.
- New courses can be designed and offered for skilling and upskilling of manpower of industry as well as academic institutes in line with the faculty expertise and laboratory infrastructure.
- Industrial consultancy can be improved with active institute-industry interaction.

Students' projects should be focused on industrial problems.

Prof. Sanjeev Bansal, (M&II) Prof. S. M. Ahuja, (ChE)

Prof. Hari Singh. 21.02.2 External Expert

Challenges:

- Declining trend of admissions especially at the PG and PhD. level.
- · Mindset of the students is slightly more inclined towards IT jobs rather than their core field.
- Communication and analytical skills of the students requires significant improvement

Suggestions for improvement:

- Emphasis needs to be laid down on providing hands-on practice on different equipment/ machineries/ software etc. to the students by way of offering On-job training (OJT)
- Faculty should develop fundamental lectures as well as videos (especially animated ones) for better understanding of engineering concepts.
- Virtual labs should be created.
- · More case studies should be included in the curriculum.
- Curriculum should include visit to at least 2~3 companies/industries after completion of their 3rd semester.
- PG and PhD students should also be included in Departmental societies/committees meant for the students where currently only UG students are majorly involved.

D. Outcomes

D.1	Placement/ higher studies/ Publications/ Consultancy,	Score		
	Ph.D. awarded etc.	Self- assessment	Expert assessment	
1	i. Placements for ICD ii. Placement of B. Tech. iii. Placement of Master Student iv. Placement of Ph. D. Students	10	10	
2	Average No. of PhDs Awarded per Year	10	08	
3	Publications per Faculty in Indexed Journals/Year (Average of last three years)	10	10	
4	Average Citations per Faculty/Year (Last-Three Years) (Web of Science/Scopus)			
5	Recognitions; Awards (National/International) to Faculty/Students	10	10	
6	Consultancy and Externally Funded Projects	04	04	
7	No. of Ph.D. graduates who took Academics as Career (Last 5 Years)	10	10	
8	Students offered for higher studies	10	10	
9	No. of qualified students NET/GATE/CAT etc. (State/Central Civil Services)	02	02	
10	Entrepreneurship			
	Total Score (out of 100)	66/80 82.05/100	64/80 80/100	

Comments & Suggestions for Improvement

Already available in the SWOC analysis.

External Expert

Prof. Sanjeev Banton (M&H) Prof. S. M. Ahuja, (ChE) Prof.

Prof. HarrSingh. 21.02.

rof. R.K. Saxena, (ME) Prof. Navdeer

SANT LONGOWALINSTITUTE OF ENGINEERING & TECHNOLOGY

(Deemed-To-Be-University) LONOGOWAL-148106

ACADEMIC AUDIT (2023 - 2024)

SUMMARY SHEET

1.	Name of the Department	Mechanical Engineering			
2.	Name of Reviewer	From Academia	From Industry		
	Designation & Address	Dr. Hari Singh, Prof. &	Nil		
		Head (ME) NIT,			
		Kurukshetra			
3.	Date of Meeting	21.02.2025			

			Score Sur	mmary			
	Academ	nics (A)	Research	Departmental	Outcome	Total Score	
ICD Programme (Max Score 100)	UG Programme (Max Score 100)	PG Programmme (Max Score 100) (Average of all PG programs) (A.3)	Program mme (Max Score 100)	(Max Score 100)	Infrastructure (Max Score 100)	(Max Score 100)	(700)
(A.1)	(A.2)	, , ,	(A 4)	(B)	(C)	(D)	(A+B+C+D
94	92	94	80	82	92	80	614/700= 87.71%

Note: 1. Marks mentioned above are the average of the marks given by the experts.

2. If marks have not been allotted for some attributes by the experts, total score can be scaled to maximum marks.

Name & Signature of HOD

Prof. Sanjeev Bansal, (M&H)

Prof. S. M. Ahuja, (ChE) Prof.