

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY
(Deemed-To-Be-University)
LONOGOWAL-148106

ACADEMIC AUDIT (2022-23) (Period 01.07.2022-30.06.2023)

PROFORMA OF ASSESSMENT

1. Name of the Department: **MECHANICAL ENGINEERING**
2. Reviewer (Name, Designation & Address): **Dr. Gian Bhushan, Professor (ME), NIT, Kurukshetra**
3. Date of Review: **07.11.2023**

NOTE:

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

A. ACADEMICS

A.1	ICD Programme	Score	
		Self-assessment	Expert assessment
1.	Curriculum (Structure, Course Syllabi, Flexibility), Theory/ practical (contents/ratio).	10	10
2.	Equivalence and Relevance of curriculum at national level	10	10
3.	Formal Academic Load on Students [Teaching, Laboratory/Practical, Projects(minor/major)]	10	10
4.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	10	10
5.	Tour/Training/Industrial visits/Internship opportunities provided during the year	9	8
6.	Effectiveness of Assisted Learning, Tutorial System for ICD Students/ Seminars (Refer Course File)	10	8
7.	Faculty Mentoring/Faculty Advisor System for Students/Class of Students	10	9
8.	Practical activities, non-academic and totally related to a specific trade for skill development and <i>developing expertise in a particular group of techniques.</i>	10	9
9.	Linkage of ICD programs to outcome based vocational education (Industry linkage)	10	9
10.	Availability of workshop type lab/laboratory for providing hand on training to the students for skill development	10	9
Total Score (out of 100)		99/100	92/100

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A.2	UG Programme	Score	
		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	8
3.	Relevance of contents of courses taught to the students and scope of improvement (revision of syllabus, addition of new experiments)	10	9
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	9
6.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation) (i) Theory and tutorial (ii) Practical (case studies)	10	10
7.	Faculty-Student Interaction (Whether any slot is fixed for the students to interact with a teacher, after classes/labs)	10	8
8.	Tour/Training/Industrial visits/Internship opportunities	10	8
9.	(a) Effectiveness of Assisted Learning in Tutorial classes/seminars for Students (b) Faculty Mentoring/Faculty Advisor System for Students/Class of Students	10	9
10.	Placement %age/higher studies options (last three years)	8	8
Total Score (out of 100)		98/100	89/100
A.3	PG Programme (Separate for each programme)	Score	
		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	10
3.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	10	10
4.	Relevance of contents of courses taught to the students and scope of improvement	10	8
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	9

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6.	Technical Societies/ Colloquium for Students i. Departmental Society ii. Student Chapter(s) of Professional Societies	-	-
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	9
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 (Ph.D.) Programmes	Score	
		Self-assessment	Expert assessment
1.	Intake of Ph.D. Students	4	4
2.	Admission Process	10	10
3.	Pre-Ph D. Courses and Evaluation Process	10	10
4.	Breadth and Depth of Knowledge of Students	8	8
5.	Seminar/ Presentations and Technical Communication	10	9
6.	Research Facilities available in the Department	10	8
7.	*Average No. of Research Students/Faculty	-	-
8.	Average No. of Research Papers of Ph. D. Students (Indexed Journals)	6	6
9.	Average Duration to Complete Ph.D. (years)	8	8
10.	Participation of Research Scholars in Conferences/Workshops	6	6
Total Score (out of 100)		72/90 (80/100)	71/90 (79/100)

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B. RESEARCH

B.1	Research and Industrial collaboration	Score	
		Self-assessment	Expert assessment
1.	Research Ambience in the Department	10	10
2.	Research Awareness among Doctoral Students	9	8
3.	Thrust areas of research in the department	9	8
4.	Quality of Research	-	-
5.	Collaborations with other departments (within the institute) and at National, and international level.	9	9
6.	Impact and Quality of Publications	9	9
7.	Relevance of Research to Knowledge Generation	9	9
8.	Student Exposure for Attending Quality Conferences/Symposia	9	9
9.	Inter departmental collaborations	8	8
10.	Industry/externally funded sponsored research (Numbers and amount)	7	7
Total Score (out of 100)		70/90 (80/100)	68/90 (76/100)

General Comments on,**1. Plan of action of the department for the next five years (in view of NEP 2020):**

- More emphasis to be laid down on Skill development courses
- On Job training (OJT) to be offered in the department especially in the following areas:
 - Welding
 - CNC machining
 - Product fabrication
 - Material testing
- Software training modules on Softwares 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.
- Externally funded/Sponsored research projects by the faculty would be submitted by the faculty of the deptt.
- FDP, STC, Workshops/Seminars (at least once every year) would be organized.
- Collaborative research especially in the thrust areas would be focused.
- Interdisciplinary research with other departments would be planned with special focus on UG, PG and Ph. D. projects.

2. Significant achievements of the department (faculty/Staff/Students):**(i) Patents Filed/granted/published/licensed**

Name of Faculty	Patent/application Number	Title of the patent	Year of Award of patent	Date of filing/granting /publishing /licensing
Anuj Bansal, Jonny Singla, Anil Kumar Singla, Deepak Kumar Goyal, Jagtar Singh	202211037172 29/06/2022	A portable mud based curvy and cone heat sinker system for outdoor air conditioner unit	Published	23.06.2023

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(ii) Training programmes held for teachers and Staff

S No	Name of the program	Duration	No of participants	Sponsoring Agency if any	Remarks
1	2D Graphics for Scientific Reporting	(25-29 July 2022)	32	Self-sponsored	Dr. Sunil Kumar, Mr. Surinder Kumar, Dr. Vivek Kumar, (ME)

(iii) Training programmes held for students

S No	Name of the program	Duration	No of participants	Sponsoring Agency if any	Remarks
01	Fundamentals of Auto CAD and its applications	08-05-2023 to 12-05-2023	50	SLIET Mechanical Engineering Society	Coordinator: Dr. Mohd Majid Dr. Sunil Kumar

(iv) Invited/Expert talks by the faculty

Sr. No.	Name of faculty member	Topic of delivered lecture/ expert lecture	Name of the organization/ Institute/ industry, where the expert lecture was delivered.	Organizer	Date/ Year of the event
1	Divesh Bharti	Crisis and Disaster Management	Sant Longowal Institute of Engineering and Technology, Longowal	NSS, SLIET	07th January 2023
2	Pardeep Gupta	Improving organizational performance through business management considering Industry 4.0 perspectives	Department of industrial and Production Engineering, Dr. B.R. Ambedkar NIT Jalandhar	Department of industrial and Production Engineering, Dr. B.R. Ambedkar NIT Jalandhar	24/02/2023
3	A. S. Shahi	One day workshop on 'Improving Weld Quality & Productivity'.	Chamber of Industrial & Commercial Undertakings (CICU), Focal Point, Ludhiana, Punjab	Chamber of Industrial & Commercial Undertakings (CICU), Focal Point, Ludhiana, Punjab	17th February 2023
4	P. K Singh	"Science & Technology in Ancient India" in National Workshop on Scientific Institutions for the Development of Mankind – February 19-20, 2023	Sant Longowal Institute of Engineering and Technology, Longowal	Ministry of Culture in association with Vigyan Parishad Panchnad and Vigyan Bharti (Vibha)	20-February.2023
5	Sunil Kumar	Industrial 4.0: Driving Agricultural Revolution	TechFEST 23, SLIET	TechFEST 23	21st March 2023
6	P. K Singh	Tolerance Analysis and Yield Estimation of	National Conference on Recent Advances	Faculty of Engineering,	17-April, 2023

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		Engineering Assemblies using Monte Carlo Simulation",	in Civil, Mechanical Electrical & Engineering (RACMEE-2023).	New Campus, University of Lucknow, Lucknow Department of Civil, Mechanical & Electrical Engineering	
7	A. S. Shahi	One day workshop on 'Gas metal arc welding'	Asian Cranes Pvt. Ltd., Ludhiana	Asian Cranes Pvt. Ltd., Ludhiana	29th April 2023
8	A. S. Shahi	One day workshop on 'Fundamentals and applications of MIG welding'.	Claas India Pvt. Ltd., Morinda, Punjab	Claas India Pvt. Ltd., Morinda, Punjab	7th June 2023

(V) Awards/ Prizes won by Students and Faculty

	Name of faculty member	Title of the award with details	Bestowing agency/ organization/ Institute	Date & year of award
1	Surinder Kumar	Quality Publication Award	SLIET Longowal	26.01.2023

3. Placement record of the department (Last three years):
UG students: 2020-21 = 33; 2021-22 = 100; 2022-23=89
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.
- Faculty of the department would be encouraged for learning through Industrial trainings/Workshops/Seminars/FDPs/STCs etc. especially pertaining to the topics related to thrust areas 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 in accordance with the National accordingly.
 - Technicians would also be encouraged to have more hands-on learning on various Research and testing equipments via enhancing their learning through attending 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.
- There is a Class monitoring committee in the department that periodically monitors the conduct of classes as well as quality of delivery of course contents
6. Technical Societies/ Colloquium for Students
- Departmental Society
 - SLIET Mechanical Engineering Society (SMES)
 - Student Chapter(s) of Professional Societies
 - Institution of Engineers (India), Kolkata-Student Chapter
7. Scope of improvement in the present teaching- learning process
- Teaching-learning process can be further enhanced by delivering course contents through interactive videos related to fundamental as well as applied topics.

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- (ii) Case studies can be included in the curriculum.
- (iii) Industrial visits can be more effectively utilized.

8. The skill and expertise of the faculty/Technical staff in the department (specific)
- Faculty expertise includes areas like Thermal, Design, Manufacturing, Welding, 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 plans 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
- Topics like AI, ML, IoT, Automation needs to be included in the course curriculum at the UG level initially.
 - PG students may be given the option for internship/dissertation. The student may submit the work done during internship as a part of the thesis. In such a case one industrial mentor can be the co-supervisor for the thesis.
 - At the UG level, best project award should be started to improve competitiveness among the students.
 - Projects should focus more on industrially oriented problems as well as address social issues at large.
 - The students should be given technical exposure beyond curriculum also.
 - Seminars may be replaced by technical discussions to ensure more participation of the students.

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Departmental Infrastructure

C.1	Departmental resources	Score	
		Self-assessment	Expert assessment
1	Adequacy of Class Rooms and Multi-Media Facility	8	8
2	Availability of Laboratories	10	10
3	Availability of Conference/Seminar Room, etc	8	9
4	Availability of Seating Space for Faculty and Research Students	10	10
5	Availability of Internet Services in Research Labs and Class Rooms	10	10
6	Departmental Library and E-Resources	10	10
7	Computing Facilities and Software	10	10
8	Adequacy of Offices and Furnishing for Faculty	10	10
9	Faculty- Student Ratio	6	6
10	Support Staff (Technical/Administrative) Adequacy	4	4
Total Score (out of 100)		86/100	86/100

SWOT 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.
- Faculty is motivated towards research and strives to achieve higher quality levels of teaching-learning process.

Weaknesses:

- Institute-industry interaction is lacking.
- Teachers do not monitor the internship/training of final year students.
- Number of PG and Ph. D. students are less.

Opportunities:

- Sufficient laboratory infrastructure is available in the department to offer vocational courses in different areas like Welding, Machining, etc. that can help in generating IRG for the institute.
- Industrial consultancy can be improved with active institute-industry interaction with the surrounding industries for addressing their practical needs.

Challenges:

- To attract sufficient number of PG and Ph. D. students ^{due to} ~~due to~~ declining trend of admissions.
- Communication skills of the students need significant improvement.

Suggestions for improvement:

- More emphasis needs to be laid down on providing hands-on practice to the students by way of offering On-job training (OJT).
- Faculty should at least attend one FDP/STC per year on emerging areas.
- PG students should also be included in Departmental societies/committees meant for the students where currently only UG students are majorly involved.
- Foreign languages can be started as audit courses which will help the students in getting admissions in good foreign institutes of repute.

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D. Outcomes

D.1	Placement/ higher studies/ Publications/ Consultancy, Ph.D. awarded etc.	Score	
		Self-assessment	Expert assessment
1	i. Placements for ICD students ii. Placement of B.Tech. students iii. Placement of Masters students iv. *Placement of Ph. D. students	7	7
2	Average No. of Ph. Ds Awarded per Year	10	9
3	Publications per Faculty in Indexed Journals/Year (Average of last three years)	6	6
4	Average Citations per Faculty/Year (Last-Three Years) (Web of Science/Scopus)	-	-
5	Recognitions; Awards (**Institute/National/International) to Faculty/Students	10	8
6	Consultancy and Externally Funded Projects	8	8
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)	8	7
10	*Entrepreneurship	-	-
Total Score (out of 100)		69/80 (86/100)	68/80 (85/100)

*Indicates that marks have not been allotted for these attributes.

** Rubrics have been modified.

Comments & Suggestions for Improvement:

Already mentioned in the section on 'SWOT analysis by the department'.

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ACADEMIC AUDIT (2022-23)

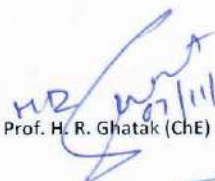
SUMMARY SHEET


1.	Name of the Department	Mechanical Engineering	
2.	Name of Reviewer Designation & Address	From Academia	From Industry
		Dr. Gian Bhushan, Professor (ME), NIT, Kurukshetra	Nil
3.	Date of Meeting	07.11.2023	

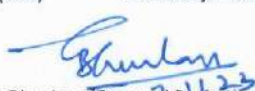
Score Summary							
Academics (A)				Research (Max Score 100)	Departmental Infrastructure (Max Score 100)	Outcome (Max Score 100)	Total Score (700)
ICD Programme (Max Score 100)	UG Programme (Max Score 100)	PG Programme (Max Score 100) (Average of all PG programs)	Doctoral Programme (Max Score 100)				
(A.1)	(A.2)	(A.3)	(A.4)	(B)	(C)	(D)	(A+B+C+D)
95.5	93.5	97	79.5	78	86	85.5	615/700 = 87.85%

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


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