SANT LONGOWAL INSTITUE OF ENGINEERING & TECHNOLOGY, LONGOWAL, DISTT. SANGRUR. DEEMED UNIVERSITY, ESTABLISHED BY : GOVT. OF INDIA

DEPARTMENT OF MATHEMATICS

Ref. No. SLIET/Maths/ ....428.....   Dated: 18/12/2023

From   :   HOD(Mathematics)

To   :   Dean(Academic)

Subject   : Assessment Report of Academic Audit 2022-23

Please find enclosed copy of assessment report of Academic Audit (2022-23) Mathematics Department.

Forwarded

J88ution 18.12.2023

Coordinator IQAC,

compiled information of AQAR may be reported at the earliest.

R-C 19/12/23

HOD(Mathematics) 18/12/23

D.No. Dean (Acad.) 1906
Dated 18/12/23

PS

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY, LONGOWAL

ACADEMIC AUDIT (2022 - 2023)

ASSESSMENT REPORT

1. Name of the Department: **Mathematics**

2. Reviewer(s):

   1. Dr. Rajesh Kumar, Dean (SW) - Member
   2. Dr. Sushma Gupta, Prof (Mathematics) -Member
   3. Dr. Parveen Khanna, Prof (M&H) - Member
   4. Dr. Sanjeev Bansal, Prof (M&H) - Member
   5. Dr. S.S. Bhatia, Prof (Mathematics, TIET)- External Expert
   6. Dr. J.R. Sharma, HOD (Mathematics) - Convener

3. Date of Review: 08/12/2023

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 Program	Score		Remarks
		Self assessment	Expert assessment	
1.	Curriculum (Structure, Course Syllabi, Flexibility), Theory/ practical (contents/ratio)	8	8	• The curriculum is designed through BoS, comprising of two external subject experts. • Meeting is held after every two years. • Feedback from students and other stake folders is taken. • There is enough flexibility in the curriculum. • No component of practical in ICD program.
2.	Equivalence and Relevance of curriculum at national level	10	10	Curriculum of Mathematics is in accordance with 'Model Curriculum for Diploma courses in Engineering & Technology 2019' of AICTE New Delhi.
3.	Formal Academic Load on Students [Teaching, Laboratory/ Practical, Projects (minor/major)]	10	10	• L=4, T=1 and P=0 for both AM-111 and AM-121. • L=3, T=1 and P=0 for AM-211 / AM-221.
4.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	10	10	Continuous evaluation process in the form of Minors (2), Major (1), Assignments (minimum 5), Quizzes (2) is followed for theory evaluations.
5.	Tour/Training/Industrial visits/Internship opportunities provided during the year	-	-	Tour/Training/Industrial visits/Internship is organized for ICD students by the parent department.
6.	Effectiveness of Assisted Learning, Tutorial System for ICD Students/ Seminars (Refer Course File)	6	6	Tutorial system for ICD needs to be strengthened by dividing the classes into smaller groups.
7.	Faculty Mentoring/Faculty Advisor System for Students/Class of Students	8	8	Mentoring of students is done via department level Tutor Guardian Mentor Scheme (TGMS).
8.	Practical activities, non-academic and totally related to a specific trade for skill development and developing expertise in a particular group of techniques	8	8	Apart from conducting regular tutorials, the students are engaged for mathematics quizzes during Science Week, Mathematics Day and Pi Day. Quizzes are also conducted through happy club.
9.	Linkage of ICD programs to outcome based vocational education (Industry linkage)	6	8	The students develop quantitative skills and logical reasoning by organizing workshops namely Vedic Mathematics.
10.	Availability of workshop type lab/laboratory for providing hand on	4	4	The students are involved in attending Workshop type

2

		Self assessment	Expert assessment	
	training to the students for skill development			Lab/Laboratory to develop their skills.
	Total Score (out of 90/100)	**70/78**	**72/80**	
A.2	**UG Program**	**Score**		
		Self assessment	**Expert assessment**	**Remarks**
1.	Curriculum (Structure, Course Syllabi, Flexibility)	8	8	• The course contents are common for all branches of engineering. • It is revised after every two years. • Open elective courses are also offered as per the requirement of engineering departments. • Department also offered Minor Degree program in Computational Techniques to the UG engineering students.
2.	Status of study material developed by faculty for students	8	8	• Study material is developed by the faculty in the form of notes. • For computer programming Lab manuals are developed to facilitate the students.
3.	Relevance of contents of courses taught to the students and scope of improvement (revision of syllabus, addition of new experiments)	8	8	• The contents are relevant according to the requirements of engineering disciplines. • The contents are also revised after every two years.
4.	Formal Academic Load on Students [Teaching, Laboratory/Practical, Projects(minor/major)]	10	10	• $3-1-0$ for BSMA-401 and 402. • $3-0-0$ for BSMA-501. • $0-0-2$ for BSMA-502.
5.	Modern teaching methods in practice other than the conventional methods E-Assisted Learning (i) Availability of Library Resources (ii) Multi-Media Assisted Teaching	8	8	• Normally conventional teaching methods are followed but for online/offline classes, PPTs, Video lectures, Graphics Tablets, Smart boards are being used. • Mobile apps for C/C++ software were also provided to the students.
6.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation) (i) Theory and tutorial (ii) Practical (case studies)	10	10	• Continuous evaluation process in the form of Minors (2), Major (1), Assignments (minimum 5), Quizzes (2) is followed for theory.
7.	Faculty–Student Interaction (Whether any slot is fixed for the students to interact with a teacher, after classes/labs	6	6	• A slot is fixed for mentoring under Tutor Guardian Mentor Scheme (TGMS) under central timetable. • Students are also encouraged to interact with teachers

3

		Self assessment	Expert assessment	
				about their problems at any time.
8.	Tour/Training/Industrial visits/Internship opportunities	-	-	• Tour/Training/Industrial visits are organized by the parent department.
9.	Effectiveness of Assisted Learning in Tutorial classes/seminars for Students	2	2	The effectiveness of tutorial classes is not so good because of large class size.
	Faculty Mentoring/Faculty Advisor System for Students/ Class of Students	4	4	• Class Counselors look after the problems of students. • Moreover, the faculty interacts to strengthen the teaching-learning process from time to time.
10.	Placement %age/higher studies options (last three years)	-	-	For B.Tech. data is available with parent Engineering departments.
	Total Score (out of 80/100)	**64/80**	**64/80**	

A.3	PG Program (Separate for each program)	Score		
		Self assessment	Expert assessment	Remarks
1.	Curriculum (Structure, Course Syllabi, Flexibility)	8	8	• Course contents are according to UGC. Several elective courses are offered. • Enough flexibility to modify the courses through BoS. • Centrally controlled feedback system is used.
2.	Formal Academic Load on Students [Teaching, Laboratory/Practical, Projects(minor/major)]	8	8	• Weekly load is L=16, T=4 and P=6. • The project work for PG students is in 4th semester.
3.	Evaluation Process (Continuing Evaluation, and End-Term Evaluation)	8	10	Continuous evaluation in the form of Minors (2), Major (1), Assignments (minimum 6), Quizzes (2) is followed.
4.	Relevance of contents of courses taught to the students and scope of improvement	8	8	Course contents are according to UGC and cover the syllabi of NET/GATE.
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	8	8	• Mainly conventional teaching methods are followed along with PPTs, Video lectures, Graphics Tablets, Smart board. • Information for e-resources like SWAYAM, MOOCs, NPTEL, SCOPUS, Web of Science is provided. • During Jan-June 2023, five students have successfully completed NPTEL courses. • Software like C/C++, MATLAB, MATHEMATICA are used.
6.	Technical Societies/ Colloquium for Students i. Departmental Society	6	6	Events are organized during Science day, Mathematics day and Pi day.

4

		Self assessment	Expert assessment	
	ii. Student Chapter(s) of Professional Societies			
7.	Tour/Training/Industrial visits/Internship opportunities	4	4	• Coaching for GATE/NET exam was given by Faculty members voluntarily. • Ms. Pooja Teotia (PGMATH-2150456) completed Internship at IIT Ropar and participated in Vigyan Vidushi Programme at TIFR, Mumbai. • Ms. Srushti Pisal (PGMATH-2150454) awarded 3rd prize in the event SHOONYA 3.0 at TIET, Patiala
8.	Collaboration with other departments (within institute)	4	4	Computer Science & Engineering Department-M.Sc. project of Ms. Srushti Pisal.
9.	Faculty Mentoring/Faculty Advisor System for Students/Class of Students	8	8	Class counsellors / teachers motivate the students to opt for higher studies / other competitive exams.
10.	Monitoring and continuous evaluation of the project work assigned to the students (mechanism)	10	10	• Students are allocated project work in 3rd semester. • Presentations will be held at the end of 4th semester.
	Total Score (out of 100)	**72**	**74**	

A.4	Doctoral (Ph.D.) Programmes	Score		Remarks
		Self assessment	Expert assessment	
1.	Intake of Ph.D. Students	6	6	Ph.D. admission during 2022-23: 04.
2.	Admission Process	10	10	Stringent admission guidelines are followed. Only NET/GATE qualified candidates are selected based on their performance in the Interview.
3.	Pre-Ph.D. Courses and Evaluation Process	10	10	• Three pre-Ph.D. courses are offered as per UGC norms: (i) Research Methodology (ii) Research Publication Ethics and (iii) Research subject related. • Continuous evaluation as per UGC/institute norms.
4.	Breadth and Depth of Knowledge of Students	8	8	The breadth and depth of knowledge is checked via test / interview held before offering the admission.
5.	Seminar/ Presentations and Technical Communication	10	10	• Two seminars are conducted during the pre-Ph.D. course. • Annual progress presentation of students is mandatory.

				• 3rd to 4th and 4th to 5th year progress as per UGC/institute norms.
6.	Research Facilities available in the Department	8	10	• Latest versions of different software are available. • High end computers/workstations are essentially required.
7.	Average No. of Research Students/Faculty	2	2	Two students per faculty.
8.	Average No. of Research Papers of Ph.D. Students (Indexed Journals)	6	6	Three.
9.	Average Duration to Complete Ph.D. (years)	6	6	• For full time students: 5 years (approx.) • For part time students: 5 years (approx.)
10.	Participation of Research Scholars in Conferences / Workshops	6	6	Research scholars are allowed to participate in conferences, and TA/DA, registration fee are reimbursed as per institute norms.
	Total Score (out of 100)	72	74	

6

B. RESEARCH

		Score		Remarks
		Self assessment	Expert assessment	
1.	Research Ambience in the Department	8	8	• All the faculty members have good expertise in their area of research. • Departmental library is equipped with around 1300 of books of Mathematics. • Latest versions of software are available in NA lab. • However, for computational work high end computers / workstations are essentially required.
2.	Research Awareness among Doctoral Students	8	8	• Students actively participate in international and national conferences. • They make good use of e-resources like Springer, Elsevier, Web of Science, JSTOR, Scopus, etc.

3.	Thrust areas of research in the department	8	8	Department offers research in areas like:
				    • Complex Analysis
				    • Linear Algebra
				    • Numerical Analysis
				    • Wavelet Analysis
				    • Mathematical Modeling
				    • Cosmology
				    • Data Science
				    • Financial Mathematics

4.	Quality of Research	8	8	Research papers are published in quality international and national journals with average impact factor equals to1.5.
5.	Collaborations with other departments (within the institute) and at National, and international levels.	8	8	• With-in institute: Computer Science and Engineering • National level: NIT, Jalandhar; IIITM, Gwalior; IPS Academy, Indore; PU, Patiala; IIT Roorkee; PAU, Ludhiana • International level: University of KwaZulu-Natal, South Africa; University of Victoria, Canada; Uninettuno University, Italy; Cameron University, USA; Technical University of Cluj-Napoca, Romania; Universidad de La

				Rioja, Spain
6.	Impact and Quality of Publications	10	10	• Research papers have good citations. • Ph.D. students are well placed in academic and research institutes. • Research papers are published in quality international and national journals with average impact factor equals to 1.5.
7.	Relevance of Research to Knowledge Generation and Social Relevance	8	8	Research work is beneficial to society and focused on thrust areas of mathematics like the new efficient algorithms that give better results in less computational time.
8.	Student Exposure for Attending Quality Conferences / Symposia	8	8	Time-to-time students actively participate in international and national conferences and workshops etc.
9.	Inter departmental collaborations	2	2	Collaboration with Department of Computer Science and Engineering only.
10.	Industry/externally funded sponsored research (Numbers and amount)	10	10	• The Department has been awarded FIST Project Grant by the GoI, Ministry of Science & Technology, DST, New Delhi under Level B category on 19/12/2022. • An amount of Rs.70 lacs has been sanctioned. The tenure of this project is for 5 years. • The amount will be utilized for the creation of one High End Computational Lab.
	Total Score (out of 100)	78	78	

General Comments on,

1. **Plan of action of the department for the next five years (in view of NEP 2020)**

    I. The revised curriculum of M.Sc. course was implemented in 2022-23.

    II. Proposal to start 5- year integrated BSc (Hons) + MSc Program course has been submitted.

    III. The department is planning to introduce the NPTEL/MOOCs courses for elective subjects for the PG students.

2. **Significant achievements of the department (faculty/Staff/Students)**

    I. The faculty members and research scholars are publishing good research papers in reputed journals.

    II. Dr. V.K. Kukreja has delivered invited lectures at University of Kashmir and Jaypee University Waknaghat.

    III. Dr. V.K. Kukreja has been the Resource Person in DBT Sponsored One Week PDP on MATLAB at Doaba College, Jalandhar, and SD College, Barnala

8

IV. Dr. V.K. Kukreja worked as an Editor in Springer Proceedings in Mathematics & Statistics, Volume 410, Frontiers in Industrial and Applied Mathematics, ISBN 978-981-19-7271-3, and Guest Editor in Special Issue: Numerical Methods for Approximation of Functions and Data of the Journal of Mathematics published by MDPI (2023).

V. Dr.V.K. Kukrejais a member Board of Studies in Mathematics Department, Mata Gujri College, Fatehgarh Sahib.

VI. Dr. Vinod Mishra is a member of PG Board of Studies in Mathematics, Kurukshetra University.

VII. Dr. R.K. Mishra has acted as subject expert in selection committee of faculty recruitment at NIT Agartala, NIT Nagaland, Kurukshetra University, Central University Bilaspur, Central University of Punjab and D.D.U. Gorakhpur.

VIII. Dr. R.K. Mishra has delivered expert lectures at Central University of Punjab and Punjabi University Patiala.

IX. Dr. Yogesh Kapil worked as a visiting scientist for 2 months (May-June, 2023) at ISI, Delhi.

X. Dr. J.R. Sharma has been assigned the responsibility as an editor of the Springer journal, Numerical Algorithms.

XI. Department organized Pi day, on March 14,2023.

XII. Workshops organized by the department attracted good number of participants from all over India.

XIII. Proceedings of the 4th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM 2021) held during December 21-22, 2021, is published in the form of a book series as Springer Proceedings in Mathematics & Statistics with:

ISSN 2194-1009 ISSN 2194-1017 (electronic)
ISBN 978-981-19-7271-3 ISBN 978-981-19-7272-0 (eBook)

XIV. SLIET Quality Publication Award (SQPA) has been received by the following Research Scholars of the department on January 26, 2023:

(a) Mr. Harmandeep Singh (Rs. 10000/-).

(b) Ms. Archna (Rs. 5000/-).

XV. The details of the pass out M.Sc. students is given below:

Students Qualified NET/GATE/TET	7
Placed / Higher Studies	5

3. **Placement record of the department (Last three years)**

I. M.Sc. students are placed in Infosys, BYJU, Chegg, Udaan, Samsung, Freelancing Mathematical Content writer and other organizations.

II. Ph.D. scholars are placed in Chandigarh University, Amrita Vishwa Vidyapeetham, Central University Bhatinda, Punjab Engg. College Chandigarhand other colleges/schools.

III. Ph. D. scholar Ms. Anita cleared HP Public Service Commission Exam.

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.**

For the effective teaching and learning process, 02 faculty members completed eight modules of MOOCs courses offered by NITTTR Chennai.

9

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

    I. From time to time, HOD (Mathematics) interacts with faculty/technical staff to enhance the teaching–learning process.
    II. Monitoring is also done through feedback forms by students.

6. **Technical Societies/ Colloquium for Students**
    I. Departmental Society: Science Club is functional at institute level. Proposed to start a departmental society.
    II. Student Chapter(s) of Professional Societies: Nil

7. **Scope of improvement in the presenting teaching-learning process**
    I. Permanent faculty and technical staff are required in the department.
    II. High end desktop computers are required.
    III. One advanced computational lab is required.
    IV. For improving teaching-learning process, research scholars and faculty must deliver one lecture per month.

8. **Skill and expertise of the faculty/Technical staff in the department (specific)**

SN	Name of Faculty Member	Area of Expertise
1.	Prof. S.S. Dhaliwal	Complex Analysis
2.	Prof. Mandeep Singh	Matrix / Operator Theory
3.	Prof. V. Mishra	History of Mathematics, Wavelet Analysis, Numerical Analysis, Number theory & Cryptography
4.	Prof. Sushma Gupta	Complex Analysis
5.	Prof. V.K. Kukreja	Numerical Analysis, Mathematical Modelling, Data Science
6.	Prof. J.R. Sharma	Numerical Analysis, General Relativity
7.	Prof. R.K. Mishra	Cosmology / Relativity, Mathematical Modelling
8.	Prof. R.K. Guha	Numerical Analysis, Mathematical Modelling
9.	Dr. Yogesh Kapil	Matrix / Operator Theory
10.	Dr. Sudhir Kumar	Numerical Analysis

9. **Strengthening laboratory infrastructure (adding of new equipment's and use of present facility for optimum use)**
   As per requirement every year new equipment is added to the Lab.

10. Any other point:

    I.   Video lectures prepared by Prof. R.K Mishra for UG/PG students are available on YouTube.

    II.   Remedial classes of ICD are assigned to interested M.Sc. students.

    III. Remedial classes of UG students are taken by faculty members of the department.

    IV. Dr. Yogesh Kapil, A.P., voluntarily gives NET and GATE coaching to PG students.

C. Departmental Infrastructure

		Score		Remarks
		Self assessment	Expert assessment	
1	Adequacy of Classrooms and Multi-Media Facility	10	10	Classrooms are adequate whereas multimedia facility is available only to M.Sc. students.
2	Availability of Laboratories	6	6	Computational lab for UG students is available.
3	Availability of Conference/Seminar Room, etc.	2	2	There is one seminar hall shared with Physics and Chemistry Departments.
4	Availability of Seating Space for Faculty and Research Students	10	10	Seating space is adequate.
5	Availability of Internet Services in Research Labs and Classrooms	10	10	Internet service is available in lab and smart classrooms.
6	Departmental Library and E-Resources	10	10	Departmental library is well equipped. Sufficient E-resources are available through central library.
7	Computing Facilities and Software	8	8	Computational labs exist for UG students. For PG and Research purposes a lab is required.
8	Adequacy of Offices and Furnishing for Faculty	10	10	More rooms are required to accommodate the guest faculty in the department.
9	Faculty- Student Ratio	6	6	>1:20 and <1:25.
10	Support Staff (Technical/Administrative) Adequacy	6	6	Trained staff is available in lab as well as department office.
	Total Score (out of 100)	**78**	**78**	

SWOT Analysis by the Department

Strengths:

- Department has been awarded FIST Project Grant by the GoI, DST, New Delhi under Level B category on 19/12/2022. An amount of Rs.70 lacs has been sanctioned. The tenure of this project is for 5 years. The amount will be utilized for the creation of one High End Computational Lab.
- Well-equipped Numerical Methods and Computational Lab for carrying out lab experiments to UG students.
- A good collection of books is available in departmental and central library pertaining to subject.
- Experienced faculty with research bent of mind with publications in reputed national and international journals.
- Licensed software such as MATLAB, Mathematica, WinEdt are available in lab.
- M.Sc. students have got admission for higher studies in IITs, SLIET and other reputed institutions and universities.
- Ph.D. students are placed in GNDU, PAU, Punjabi University, DAV University, Amrita University, DAVIET, Chandigarh University, PEC and other reputed colleges.
- Students belonging to different states take admission in M.Sc. / Ph.D. program.
- Admissions to M.Sc. programme quite satisfactory.
- E-resources are available through central library.

Weaknesses:

- Shortage of regular faculty, research scholars being assigned teaching load.
- Inadequate number of technical staff in lab.
- For PG and Research scholars, a high-end computational lab is required.
- Inadequate rooms for guest faculty and research scholars.
- Well-equipped HOD office is need of the hour.

Opportunities:

- Faculty members as well as students can enhance their knowledge through available e-resources.
- Submission of integrated B. Sc. (Hons) - M.Sc. program proposal.
- Focus on inter-disciplinary research approach.
- Preparation of standardized study material for ICD classes.
- Advertisement of teaching staff has already been issued.

Threats:

- Three faculty scheduled to retire in next two years.

- Presently no permanent lab technician.
- Admissions are declining over the years in various programmes.
- Inadequate high end computational lab for Ph.D. students in hampering research work.

Suggestions for improvement:

- More permanent faculty members are required to handle the tutorials and labs effectively. Then more choice-based courses will be offered in M.Sc. (Mathematics) program and more optional elective subjects will be floated to UG students as well.

- Cadre restructuring for technical staff required to look into the changing requirements of the department.

- AICTE guidelines be followed for assigning tutorials.

- Infrastructure like rooms and other facilities need to be provided and allocated to the department.

- One computational laboratory is required for M.Sc. (Mathematics) and Ph.D. students.

- More faculty members should submit more proposals for research projects to external funding agencies.

- Ways should be evolved to attract a good number of bright students for Ph.D. as well as for M.Sc. (Mathematics) program.

- The OBE implementation needs improvement and understanding by the faculty.

- BOS needs to be convened on regular basis to revise the curriculum as per the needs of the industry, and feedback from the students and other stakeholders.

D. Outcomes

		Score		Remarks
		Self assessment	Expert assessment	
1	i. Placements for ICD students	-	-	Not related
	ii. Placement of UG students	-	-	Not related
	iii. Placement of PGstudents	3 (5)	3 (5)	Data at page 9 (under General Comments)
	iv. Placement of Ph.D. students	5 (5)	5 (5)	100% of Ph.D. Students are placed
2	Average No. of Ph.D.'s Awarded per Year	10	10	4
3	Publications per Faculty in Indexed Journals/Year (Average of last three years)	10	10	3
4	Average Citations per Faculty/Year (Last-Three Years) (Web of Science/Scopus)	8	8	20
5	Recognitions; Awards (National/International) to Faculty/Students	6	6	Member of BoS of different universities / college, Member of Advisory Committee in Conferences, Member of editorial board, Subject expert in selection committee of faculty recruitment.
6	Consultancy and Externally Funded Projects	10	10	• FIST Project worth Rs. 70 Lacs has been awarded to Department by DST, New Delhi on 19/12/2022for 5 years. • Entrepreneurship Development Project worth 94.5 Lakhs has been awarded to Prof. R.K. Mishra from DBT, New Delhi.
7	No. of Ph.D. graduates who took Academics as Career (Last 5 Years)	10	10	All Ph.D. students>5.
8	Students offered for higher studies	10	10	>25%
9	No. of qualified students NET/GATE/CAT etc. (State/Central Civil Services)	10	10	>20%
10	Entrepreneurship	8	8	15.5%
	Total Score (out of 100)	**90**	**90**	

Comments & Suggestions for Improvement:
- Focus should be on more tutorial classes for ICD students to enhance their problem-solving skills.
- Under mathematics society, the academic activities for the M.Sc. and Ph.D. students should be organized at departmental level.
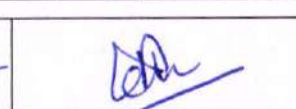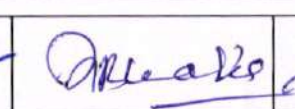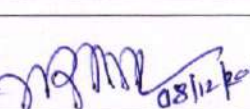
14
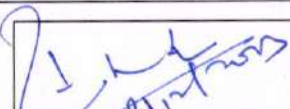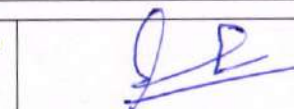
- Faculty members should be encouraged to submit research projects to external funding agencies.
- Mock test series for M.Sc. students may be started to increase their pass percentage in NET/GATE/CAT/Other exams etc.
- Research scholars to be encouraged for quality research work and present the same at different platforms.

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY
ACADEMIC AUDIT (2022 - 2023)
SUMMARY SHEET

1.	Name of the Department	Mathematics
2.	Name of Reviewer Designation & Address	From Academia 1. Dr. Rajesh Kumar, Dean (SW) - Member 2. Dr. Sushma Gupta, Prof (Mathematics) -Member 3. Dr. Parveen Khanna, Prof (M&H) - Member 4. Dr. Sanjeev Bansal, Prof (M&H) - Member 5. Dr. S.S. Bhatia, Prof (Mathematics, TIET)- External Expert 6. Dr. J.R. Sharma, HOD (Mathematics) - Convener
3.	Date of Meeting	08/12/2023

Score Summary								
Academic					Research	Departmental Infrastructure	Outcome	Total Score
ICD Program	UG Program	PG Programs (Max Score 100)	Doctoral Program					
(Max Score 100)	(Max Score 100)	(Average of all PG programs)	(Max Score 100)		(Max Score 100)	(Max Score 100)	(Max Score 100)	(700)
80	80	74	74		78	78	90	554

Note: 1. Marks mentioned above is 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.

Prof. Rajesh Kumar DEAN (SW)	Prof. Sushma Gupta Nominated Member	Prof. Parveen Khanna Nominated Member	Prof. Sanjeev Bansal Nominated Member	Prof. S.S. Bhatia External Expert	Prof. J.R. Sharma HOD (Mathematics)

Details of Publications –Annexure

Publications: Web of Science/ Scopus/UGC Care

S. No.	Title	Authors	Department	Journal, Volume and No.	Year	Impact factor	ISSN
1	Subordination of Cesaro means of convex functions	Manju Yadav, Sushma Gupta and Sukhjit Singh	Mathematics	Bulletin of Malaysian Math. Sci. Soc, 46, article no. 48, page 1-17.	2023	IF 1.2	0126-6705
2	Linear combinations of univalent harmonic mappings with complex coefficients	Deepali Khurana, Raj Kumar Garg, Sushma Gupta and Sukhjit Singh	Mathematics	Math. Vesnik, 74,3 , 189-196.	2022	IF 0.8	0025-5165
3	On a question of Bhatia, Friedland and Jain II	Mandeep, Yogesh Kapil and Mandeep Singh	Mathematics	Linear and Multilinear Algebra, DOI 10.1080/03081087.2023.2209269	2023	IF 1.1	0308-1087
4	An extension for matrices of Young's inequality	Anju Rani, Yogesh Kapil and Mandeep Singh	Mathematics	Adv. Oper. Theory 8, 45	2023	IF 0.8	2662-2009
5	Piecewise Symmetric Magic Cube: Application to Text Cryptography	Narbda Rani, Vinod Mishra and Birmohan Singh	Mathematics	Multimedia Tools and Applications ,82, 19369-19391	2023	IF 3.6	1573-7721
6	Image Encryption Model based on Novel Magic Square with Differential Encoding and Chaotic Map	Narbda Rani, Vinod Mishra and Suvita Rani Sharma,	Mathematics	Nonlinear Dynamics (Springer), 111, 2869-2893	2023	IF 5.6	1573-269X
7	Ways of Constructing Multiplicative Magic Cubes	Narbda Rani and Vinod Mishra	Mathematics	Springer Proceedings in Mathematics and Statistics (Springer) 410, 79-86 (FIAM 2021)	2023	SJR, 0.221	2194-1017
8	Study of 4th order Kuramoto-Sivashinsky equation by septic Hermite collocation method	Archna Kumari and VK Kukreja	Mathematics	Applied Numerical Mathematics, 188, 88-105	2023	IF 2.8	0168-9274
9	Solution of generalized regularized long-wave equation with optimal spline collocation	Shallu & VK Kukreja	Mathematics	International Journal of Computer Mathematics, 100(1), 1-19,	2023	IF 1.8	0020-7160

	technique and implicit Crank-Nicolson as well as explicit SSP-RK43 scheme						
10	Shishkin mesh based septic Hermite interpolation algorithm for time-dependent singularly perturbed convection–diffusion models	Archna Kumari and VK Kukreja	Mathematics	Journal of Mathematical Chemistry, 60(10), 2029-2053	2022	IF 1.7	0259-9791
11	An optimal B-spline collocation technique for numerical simulation of viscous coupled Burgers' equation	Shallu and VK Kukreja	Mathematics	Computational Methods for Differential Equations, 10(4), 1027-1045	2022	Scopus	2345-3982
12	An improvised collocation algorithm to solve generalized Burgers'-Huxley equation, Springer,	Shallu and VK Kukreja,	Mathematics	Arabian Journal of Mathematics, 11(20), 379-396	2022	IF1.2	2193-5351
13	Solution of dual boundary layer singular perturbation problem by septic Hermite collocation technique	Archna Kumari, Shallu and VK Kukreja	Mathematics	International Journal of Applied & Computational Mathematics, 8(5), 226(1-17)	2022	Scopus	2349-5103
14	A simple yet efficient two-step fifth-order weighted-Newton method for nonlinear models	H Singh, JR Sharma, S Kumar	Mathematics	Numerical Algorithms, 93, 203-225	2022	IF 3.041	1017-1398
15	Higher order Traub–Steffensen type methods and their convergence analysis in Banach spaces	D Kumar, JR Sharma, H Singh	Mathematics	International Journal of Nonlinear Sciences & Numerical Simulation, https://doi.org/10.1515/ijnsns-2021-0202	2022	IF 2.007	1565-1339
16	Semilocal convergence analysis of an efficient Steffensen-type fourth order method	JR Sharma, IK Argyros, H. Singh	Mathematics	Journal of Analysis, 31, 1573-1586	2022	IF 0.8	0971-3611
17	Extended convergence analysis of optimal eighth order method for solving nonlinear equations	IK Argyros, JR Sharma, H Singh,	Mathematics	Annales Univ. Sci. Budapest, Sect. Comp., 53, 109–122	2022	--	--

18	A Computationally Efficient Sixth-Order Method for Nonlinear Models	J.R. Sharma, H. Singh	Mathematics	Springer Proceedings in Mathematics & Statistics, 410, 567-585	2023	IF 0.23	2194-1017
19	Simple and efficient fifth order solvers for systems of nonlinear problems	H Singh, JR Sharma	Mathematics	Mathematical Modelling and Analysis, 22 (1), 1-22	2023	IF 1.8	1392-6292
20	Simple yet highly efficient numerical techniques for systems of nonlinear equations	H Singh, JR Sharma	Mathematics	Computational and Applied Mathematics, 42:22 https://doi.org/10.1007/s40314-022-02159-9	2023	IF 2.6	1807-0302
21	Extended comparison between two Newton-Jarratt sixth order schemes for nonlinear models under the same set of conditions	JR Sharma, S Kumar, IK Argyros, C.I. Argyros	Mathematics	Applicationes Mathematicae, DOI: 10.4064/am2437-2-2023	2023	IF 0.36	1730-6280
22	Numerical Solution of Nonlinear Problems with Multiple Roots Using Derivative-Free Algorithms	S. Kumar, J.R. Sharma, J. Bhagwan, Lorentz Jantchi	Mathematics	Symmetry, 15, 1249. Doi:10.3390/sym15061249	2023	IF 2.7	2073-8994
23	A fractional Traub-Steffensen-type method for solving nonlinear equations	H Singh, J.R. Sharma	Mathematics	Numerical Algorithms, https://doi.org/10.1007/s11075-023-01601-1	2023	IF 3.041	1017-1398
24	Generalized convergence conditions for the local and semilocal analyses of higher order Newton-type iterations	H Singh, J.R. Sharma	Mathematics	Computational and Applied Mathematics https://doi.org/10.1007/s40314-023-02480-x	2023	IF 2.6	1807-0302
25	Certain Investigation on Bulk Viscous String Models of the Universe with BVDP	R.K. Mishra and Heena Dua	Mathematics	Bulg. J. Phys. vol.50 no.2 (2023), pp. 095-114, doi: https://doi.org/10.55318/bgjp.2023.50.2.095	2023	UGC CARE	1314-2666
26	Investigation on Behavior of Deceleration Parameter with LRS Bianchi Type-I Cosmological Models	R.K. Mishra and Heena	Mathematics	Indian J Phys 97, 993–1006 (2023). https://doi.org/10.1007/s12648-022-02412-1	2022	SCIE 2.36	0973-1458

27	Cosmological model with variable parameters	Navya Jain, Heena Dua, and R.K. Mishra	Mathematics	Journal of Physics: Conference series (IOP)	2023 (To appe ar)	SJR /SCOPU S IF- 0.183	1742- 6596
28	Cosmological model in $f(R,T)$ theory with time-varying FLVDP	Rahul Sharma, Avtar Chand, and R.K. Mishra	Mathematics	Journal of Physics: Conference series (IOP)	2023 (To appe ar)	SJR /SCOPU S IF- 0.183	1742- 6596

D	Full Paper in International conferences							
	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Title of proceedings	Affiliating Institute
1	Study of complex dynamics of some iterative techniques for computing multiple roots	S. Kumar, D. Kumar, J.R. Sharma, R. Kumar	Mathematics	AIP Conference Proceedings	2022	1551-7616	Frontier of Industrial and Applied Mathematics	NIT Hamirpur
2	Magic Squares in Indian Mathematics: Constructions and Properties	Vinod Mishra and Narbda Rani	Mathematics	Bloomsbury Publishing, U.K.	2022	978-93-54358-94-4	Understandin g Values and Ethics in Shrinking World	Central University of Rajasthan
3	Application of Magic Squares in Cryptography	Narbda Rani and Vinod Mishra	Mathematics	Proceedings in Adaptation, Learning and Optimization (Springer Book Series)	2022	2363-6092	International conference on Intelligent Vision and Computing	Sur University College Oman
4	A Computationally Efficient Sixth-Order Method for	J.R. Sharma, H. Singh	Mathematics	Springer Proceedings in Mathematics	2023	2194-1017	Frontier of Industrial and Applied	SLIET

	Nonlinear Models			& Statistics, 410, 567-585			Mathematics	
5	Ways of Constructing Multiplicative Magic Cubes	Narbda Rani and Vinod Mishra	Mathematics	Springer Proceedings in Mathematics & Statistics	2023	2194-1017	Frontier of Industrial and Applied Mathematics	SLIET

E: Full Paper in National conferences

	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Title of proceedings	Affiliating Institute
1	Fibonacci Sequence: History and Modern Applications	Vinod Mishra	Mathematics	National Mission for Manuscripts and DK Print world (P) Ltd, New Delhi	2022	978-93-80829-70-8	History and Development of Mathematics in India (Proceedings of CHDM Conference, Kanchipuram 2018	