

DEPARTMENT NAME: Applied Science Department**I. Details of M.E. Programmes:**

ME Subjects	Batches	Name of the Faculty
PHDP-03-Nano Materials and Characterization (PhD Subject)	Nov. 15, 2021 onwards--ongoing	Dr. Ashok Kumar

II.**A. STUDENT TRAINING Organized:**

Sr. No.	Name of the Course along with dates & place	No. of weeks	Participation		Total No. of Participants
			Poly	Engg.	
1.	Nanomaterials and their characterization ICT -AS-8 27.09.2021 to 01.10.2021	01			32
2.	Spectroscopic Techniques and Instrumentation ICT -AS-9 04.10.2021 to 08.10.2021	01			20
3.	Smart Materials and Nanotechnology ICT -AS-10 25.10.2021 to 29.10.2021	01			16
4.	Green Energy Materials and Technology ICT -AS-12 29.11.2021 to 03.12.2021	01			30
5.	Optimization with MATLAB ICT -AS-13 29 .11. 2021 to 03 .12. 2021	01			14
6.	Essential Materials Physics for Engineers ICT -AS-15 27.12.2021 to 31.12.2021	01			28
7.	Trends in Fiber Optics Technology ICT-AS-17 13.12.2021 to 17.12.2021	01			12

B.. INTERNATIONAL CONFERENCES Organized

Sr. No.	Name of the Seminar/Conference	Total No. of Participants

C. NATIONAL CONFERENCES ORGANIZED:

Sr. No.	Name of the Seminar/Conference	Total No. of Participants
1.		

III WORKSHOPS CONDUCTED (OTHER THAN CURRICULUM DEVELOPMENT WORKSHOPS):

Sr. No.	Name of the Workshop along with dates and venue	Total No. of Participants
1.	O. Plan Workshop- Delhi State (December 29, 2021)	29
2.	O. Plan Workshop- HP State (November 26, 2021)	41

IV. INSTRUCTIONAL MATERIAL DEVELOPMENT

Sr. No.	Type of Instructional Material Developed	Author(s) /Team	Project Completed In progress	Specific Achievements during the year	Target date of completion
PRINT MATERIAL					
NON-PRINT MATERIAL					
1.	e-content (PPTs & assignments) for STCs (ICT-AS-9, ICT-AS-12, ICT-AS-15)	Dr. Pankaj Sharma & Dr. Ashok Kumar	Completed		
2.	e-content (PPTs & assignments) for STCs (ICT-AS-8)	Dr. Pankaj Sharma, Dr. B.C. Choudhary & Dr. Ashok Kumar	Completed		
3.	e-content (PPTs & assignments) for STCs (ICT-AS-10)	Dr. B.C. Choudhary & Dr. Pankaj Sharma	Completed		
4.	e-content (PPTs & assignments) for STCs (ICT-AS-13)	Dr. K.C. Lachhwani	Completed		
5.	e-content (PPTs & assignments) for STCs (ICT-AS-17)	Dr. B.C. Choudhary & Dr. Balwinder Raj	Completed		

INSTRUCTIONAL MATERIAL DEVELOPMENT

Type of Instructional Material	No. Completed during 2021-22	Remarks (if any)
PRINT:		
Text Books		
Lab. Manuals		
Teachers' Manual		
Modules		
Readers		
Any other (Please specify) - Book Chapters		

NON-PRINT :		
Video Films		
CAI Packages		
Experimental Kits		
Charts		
Any other (Please specify)	02	<p>1. Pankaj Sharma, Vineet Sharma, Nikhil Thakur, Pawan Kumar, and Ashok Kumar. "Ferrite Materials for Microwave and High Frequency Antenna Applications." In Ferrites and Multiferroics, pp. 107-115. Springer, Singapore, 2021. DOI: 10.1007/978-981-16-7454-9_6</p> <p>2. Sumit Bhardwaj, Joginder Paul, Gagan Kumar, Pankaj Sharma, and Ravi Kumar. "Multiferroicity in Aurivillius Based Bi4Ti3O12 Ceramics: An Overview, Future Prospective and Comparison with Ferrites." Ferrite: Nanostructures with Tunable Properties and Diverse Applications 112 (2021): 311-335. DOI: 10.21741/9781644901595-9</p>

Information above to be given only in case of completed Learning Resources. Title of the material(s) (topics/subjects as the case may be) should also be given.

V. CURRICULUM DEVELOPMENT

A. CURRICULA DESIGNED:

B. CURRICULA REVISED:

C. CURRICULUM DEVELOPMENT WORKSHOPS:

Sr. No.	Name of Curriculum	Number of Subjects/Course	Beneficiary States	Participation		
				Poly.	Ind.	Others

VI. RESEARCH AND DEVELOPMENT

Sr. No.	Name of Project	Team	Beneficiary State	Status of Project completed/ In progress	Specific work done during the year	Target date of completion
A. RESEARCH STUDIES						
1.	PhD Thesis Work	Ekta Sharma, Dr Pankaj Sharma & Dr PB Barman		In progress	03 SCI Publication, 01 paper under Review	March, 2022
2.	PhD Thesis Work	Nikhil Thakur, Dr Pankaj Sharma & Dr Pawan Kumar		In progress	02 papers under Review in SCI journal	December 2023
3.	Ph.D Thesis work	Deji R, Dr BC Choudhary & Dr Ramesh K Sharma		In Progress	02 SCI Publications, 01 Conference	December 2022
4.	Ph.D Thesis work	Jyoti R, Dr BC Choudhary & Dr Ramesh K Sharma		In Progress	01 SCI under Review, 01 Conference	October 2022
5.	Ph.D Thesis work	Nihal, Dr BC Choudhary & Dr J K Goswamy		In Progress	Working on Simulations using ATK/VNL for Toxic Gas Sensing	December 2024
6.	Ph.D Thesis work	Kanika Sharma, Dr BC Choudhary & Dr Gurleen Kaur Walia		In Progress	Work started on VOC Sensing Simulation using ATK/VNL	October, 2025
7.	Ph.D Thesis work	Ms. Manju Devi, Dr. Ashok Kumar, Prof. Ashavani Kumar		In Progress	pre-PhD presentation completed in September 2021	Thesis to be submitted on 31-01.2022
8.	Ph.D Thesis work	Mr. Amit Kumar, Dr. Ashok Kumar, Prof. Ashavani Kumar		In Progress	pre-PhD presentation completed in November 2021	Thesis to be submitted 10.01.2022
9.	Ph.D Thesis work	Ms. Deeksha Nagpal, Dr. Ashok Kumar, Prof. Ajay Vasishth,		In Progress	---	July 2023
10.	Ph.D Thesis work	Mr. Anup Singh, Dr. Ashok Kumar, Prof. Ajay Vasishth		In Progress	---	July 2023

11.	Ph.D Thesis work	Ms. Renu Dhahiya, Dr. Ashok Kumar, Dr. Sanjeev Gautam		In Progress	-----	December 2024
B. DEVELOPMENT PROJECTS						
1.	Intelligent Nanophotonics (FDP conducted during 04-09 Oct 2021)	Dr Mala Kalra Dr Ashok Kumar		completed	-	Oct. 04-09, 2021
2.	Development of novel bioactive glass ceramics for synergistic therapy of bone tumor and regeneration of bone tissue (Post-doctoral Fellowship)	Dr. Narender Ranga (PI), Dr. Ashok Kumar (mentor)	-	Submitted, June 01, 2021	Under review	
3.	FIST program - 2020	DST- One of the PI in the team for use of agriculture waste for supercapacitor application- Dr. Ashok Kumar		Ongoing	-	2025
4.	Engineered novel cobalt-free nanostructured double perovskites for asymmetric energy storage device application	Dr. Ashok Kumar, Dr. Pankaj Sharma (UGC-DAE)		Submitted on August 31, 2021	-	
5.	One JRF- CSIR	Dr Ashok Kumar	-	Supervising since 29.10.2020	--	2025
C. DISSERTATION FOR MASTER'S DEGREE PROGRAMMES COMPLETED						

VII. EXTENSION SERVICES AND CONSULTANCY

Sr.No.	Name of Project	Team	Beneficiary Organization	Status of Project Completed/in Progress	Specific work done during the year
A. EXTENSION SERVICES PROJECTS:					

Sr. No.	Name of Programme/ activity	Period	Beneficiary State/ Institute/Organisation	Role	Remarks
1.					

VIII. TRAINING PROGRAMMES ATTENDED BY THE INSTITUTE FACULTY/STAFF

Sr. No.	Title of Training Programme	Period of Training	Venue	Attended by
1.	ATAL FDP on "Mathematical Foundations for Machine Learning"	22 -26 Nov' 2021	Via Online organized by Sri Buddha College of Engineering, Alappuzha, Kerala	Dr. KC Lachhwani
2.	Attended online course "TAPAS-PRM"	16 – 20 Dec'2021	Online organized by IIT Guwahati	Dr. KC Lachhwani

IX. IN-HOUSE TRAINING PROGRAMMES

Sr. No.	Title of Training Programme	Period of Training	Attended by

X. OTHER CONTRIBUTIONS INCLUDING INDIVIDUAL CONTRIBUTION

A. PATENTS/COPYRIGHT

Sr.No.	Name of Patents/Copyright	Author (s) Name

B. PAPERS PUBLISHED BY THE INSTITUTE FACULTY:

SCI JOURNAL

1.	Ritu Rani, K M Battoo, Pankaj Sharma, Gagan Anand, Gagan Kumar, Sumit Bhardwaj, and M. Singh. "Structural, morphological and temperature dependent electrical traits of Co _{0.9} Zn _{0.1} Ni _x Fe _{2-x} O ₄ spinel nanoferrites." <i>Ceramics International</i> 47, no. 21 (2021): 30902-30910.
2.	A. El-Denglawey, Pankaj Sharma, Pawan Kumar, Ekta Sharma, Dinesh C. Sati, K. A. Aly, and A. Dahshan. "Dark, photo and thermally driven conductivity of Ag-mixed Se ₇₀ Te ₃₀ semiconducting thin films for thermoelectric applications." <i>Journal of Materials Science: Materials in Electronics</i> 32, no. 20 (2021): 25074-25083
3.	A. El-Denglawey, K. A. Aly, Ekta Sharma, Rajeev Arora, Sunanda Sharda, Pankaj Sharma, and A. Dahshan. "Topological analysis and glass kinetics of Se-Te-Ag lone pair semiconductors." <i>Physica Scripta</i> 96, no. 12 (2021): 125710.
4.	Chandresh Kumari, S. C. Katyal, and Pankaj Sharma. "Erbium-doped GeSbSe glassy semiconductors and theoretical analysis of constraint, electronic and thermal properties." <i>Phase Transitions</i> 94, no. 12 (2021): 945-958.
5.	Deji, BC Choudhary, Ramesh K Sharma "Hydrogen Sulfide Gas Sensor using Osmium Doped Graphene Nanoribbon: An Insights from DFT Study" <i>Materials Letters Vol 306</i> , December, 2021
6.	Deji R, Akarsh Verma, B. C. Choudhary, Ramesh K Sharma, Research Paper 'New insight into NO absorption on alkali metal and transition metal doped graphene nanoribbon surface: A DFT Approach' <i>Journal of molecular graphics of modelling</i> 16 Dec, 2021 108/09 (SCI)
7.	Amit Kumar Vats, Nitika Sangwan, Jashandeep Singh, Ashok Kumar and Ashavani Kumar, Anion intercalation pseudo-capacitance performance of oxygen-deficient double perovskite prepared via facile wet chemical route, <i>Materials Science in Semiconductor Processing (SCI)</i> doi: 10.1016/j.mssp.2021.106300 (2022)
8.	Amit Kumar Vats, Nitika Sangwan, Ashok Kumar and Ashavani Kumar, Symmetric/asymmetric energy

	storage device of reduced graphene oxide assisted $\text{LaNi}_{0.9}\text{Co}_{0.1}\text{O}_3$ perovskite nanomaterials, Applied Physics A (SCI) doi: 10.1007/s00339-021-05113-4 (2021).
9.	Amit Kumar Vats, Ashok Kumar , Parasmani Rajput and Ashavani Kumar, Engineered perovskite $\text{LaCoO}_3/\text{rGO}$ nanocomposites for asymmetrical electrochemical supercapacitor application, Journal of Materials Science: Materials in Electronics (SCI) doi: 10.1007/s10854-021-07464-3 (2021).

C. PAPERS PUBLISHED BY THE INSTITUTE IN INTERNATIONAL JOURNAL OTHER THAN SCI JOURNALS

Sr.No.	Name of the Paper Published	Author (s) Name
1.	AIP Conference Proceedings “Carbon Monoxide Sensors using co-doped graphene nanoribbon optimized with DFT” 2369; 13 September, 2021	Dr. B.C Choudhary
2.	AIP Conference Proceedings “Graphene oxide nanoribbons decorated with Cu and CuO as H ₂ S gas sensor optimized with DFT” 2369; 13 September, 2021	Dr. B.C Choudhary

D. PAPERS PUBLISHED BY THE INSTITUTE FACULTY IN NATIONAL JOURNAL

Sr.No.	Name of the Paper Published	Author (s) Name

E. PAPERS PUBLISHED / PRESENTED IN INTERNATIONAL CONFERENCES/SEMINARS

Sr.No.	Title of the Paper Presented/Accepted alongwith a Name of the Conference/Seminar (venue, with date)	Author (s) Name
1.	Titled “Simplified TOPSIS for MLN-MODM Problems” Presented in International Conference on Computational Intelligence organized by IIIT Pune on 28-29 Dec’2021	Dr. KC Lachhwani
2.	Titled “A Comprehensive Review Analysis on PSO and GA techniques for Mathematical Programming Problems” Presented in International Conference on Computational Intelligence organized by IIIT Pune on 28-29 Dec’2021	Dr. KC Lachhwani

PAPERS PUBLISHED / PRESENTED IN NATIONAL CONFERENCES/SEMINARS

Sr.No.	Title of the Paper Presented/Accepted alongwith a Name of the Conference/Seminar (venue, with date)	Author (s) Name

Other Activities

1. Member in Screening Committee (06-08 December, 2021), CUHP Dharamshala (Dr Pankaj Sharma).
2. External Examiner for PhD Thesis evaluation and PhD thesis oral defence (24.11.2021), Maharaja Agarsen University Baddi HP (Dr. Pankaj Sharma)
3. External Examiner for PhD Thesis evaluation, Eternal University Baru Sahib (Dr. Pankaj Sharma)
4. Ph.D synopsis meeting (online) (Nikhil Thakur) Shoolini University, Solan (Dr. Pankaj Sharma)
5. Member of Judgement panel in Hindi Language Month Competition (Dr. Pankaj Sharma)

6. Member of Judgement panel in Vigilance Awareness Week- 2021 activities (Dr. Pankaj Sharma)
7. Recruitment Exam answer sheet evaluation, NITTTR, Chandigarh (Dr. Pankaj Sharma)
8. Expert talk on “Research and Innovation in Nano-materials” on 21-09-2021 in STC Emerging areas of innovation and research in science and technology (20-24 Sept, 2021) (Dr. Pankaj Sharma)
9. ATAL- FDP Invited Talk on “OWC FSO & Lifi” at GBP Engg. College, Pauri Garhwal. “Recent trend in optical electronics and Optical communication” 15-19 Nov, 2021(Dr. B.C. Choudhary)
10. RDC meeting of PhD student (Deji) at Physics dept. PU (Dr. B.C. Choudhary)
11. Worked as member of committee for document verification for the post of Sr. Administrative officer at this institute. (Dr. KC Lachhwani)
12. Worked as Rapporteur in International Conference organized by ECE department of this institute. (Dr. KC Lachhwani)
13. Participated in Hindi Language Month competitions and won following prizes: (Dr. KC Lachhwani)
 - a. 1st Prize in Hindi Dictation
 - b. 2nd Prize in Hindi Noting and Drafting
 - c. 2nd Prize in Hindi word knowledge
14. Delivered Invited talk in International conference ICAIR – 2021 organized by ICFAI university Jaipur(Dr. KC Lachhwani)
15. Delivered invited talk in online orientation programme for B. Tech students organized by GCET, Jammu. (Dr. KC Lachhwani)
16. Delivered expert talks on 14Th Dec’2021 and 15th Dec’2021 during STC on “Optimization with MATLAB” organized by Mechanical Engineering department of this institute. (Dr. KC Lachhwani)
17. Delivered expert talks on 28Th Dec’2021 during STC on “Modelling and Simulation using MATLAB” organized by Mechanical Engineering department of this institute. (Dr. KC Lachhwani)
18. Paper settings and answer sheet evaluation for university papers. (Dr. KC Lachhwani)

Sr. No.	Name of Programme/ activity	Period	Beneficiary State/Institute/ Organisation	Role	Remarks
1.	Documents verification of recruitment – September 2021-	September 01, 2021	NITTTR Chandigarh	Documents verification duty	Dr. Ashok Kumar
2.	Answer sheet evaluation of recruitment – September 2021	September 01, 2021	NITTTR Chandigarh	Evaluation duty	Dr. Ashok Kumar
3.	International Conference on Emerging Technologies: AI, IoT and CPS for Science & Technology Applications held at NITTTR Chandigarh.	6th – 7th September 2021	NITTTR Chandigarh.	Session co-chair	Dr. Ashok Kumar
4.	M.Tech./ PhD Documents verification	September 16, 2021	NITTTR Chandigarh	Documents verification duty	Dr. Ashok Kumar
5.	Research Committee Meeting for research scholars, Mr. Amit Kumar and Ms. Manju Devi	October 12, 2021	NIT Kurukshetra	Co-supervisor	Dr. Ashok Kumar

6.	Invited Talk - Nanotechnology and its applications	October 13, 2021	Chandigarh Uni.	Expert	Dr. Ashok Kumar
7.	Expert talk on Smart Materials for Clean Energy & Environment in the STC on Smart materials and nanotechnology (ICT AS 10)	October 29, 2021	NITTTR Chandigarh	Expert	Dr. Ashok Kumar
8.	DRC Meeting of Ms. Manju Devi	November, 09, 2021	NIT Kurukshetra	Co-supervisor	Dr. Ashok Kumar
9.	Delivered online expert talk on "Understanding nano-sensors with practical examples" in a ATAL-Faculty Development Program on Molecular Manufacturing, organized by G Pulla Reddy Engineering College, Andhra Pradesh,	December 12, 2021	National	Expert	Dr. Ashok Kumar
10.	Performance review of the of work carried out by the research scholar Ms. Seema for Ph.D fellowship enhancement from JRF to SRF	December 22, 2021	NIT Hamirpur	External expert	Dr. Ashok Kumar
11.	Toycathon-2021- An inter-ministerial initiative organized by Ministry of Education's Innovation Cell with support from All India Council for Technical Education, Ministry of Women and Child Development, Ministry of Commerce and Industry, Ministry of MSME, Ministry of Textiles and Ministry of Information and Broadcasting	2021	National	Primary Evaluator	Dr. Ashok Kumar