



**MANAV RACHNA  
UNIVERSITY**  
Declared as State Private University vide Haryana Act 26 of 2014

**MANAV RACHNA UNIVERSITY**  
(Formerly Manav Rachna College of Engineering)  
**Faridabad**

**MINUTES OF  
TWENTY FIRST MEETING  
OF THE  
ACADEMIC COUNCIL**

**Dated: 30.05.2023**

**MINUTES OF TWENTY FIRST (21<sup>st</sup>) MEETING OF THE ACADEMIC COUNCIL OF MANAV RACHNA UNIVERSITY HELD ON 30.05.2023 AT 11:00 AM IN HYBRID MODE (PHYSICAL & VIRTUAL) AT G-BLOCK, MR CAMPUS.**

Twenty First Meeting of the Academic Council of Manav Rachna University was held on 30.05.2023 at 11:00 AM in Hybrid Mode through MS-Team, to consider various academic matters.

The following were present

- (1) Prof. I.K. Bhat, Vice Chancellor / Chairman
- (2) Prof. Sangita Banga, Pro Vice Chancellor
- (3) Prof Pradeep Kumar Varshney, Dean, Sciences & Research
- (4) Prof. Shruti Vashist, Dean, Academics & Engineering
- (5) Prof. Parul Jhahharia, Dean, Management & Commerce
- (6) Prof. Geeta Thakur, Dean, Students Welfare
- (7) Prof. Kanu Priya, Dean & HoD, Law
- (8) Prof. D.K. Sharma, Dean, Examination
- (9) Prof. Manpreet Kaur, HoD, CST
- (10) Prof. Joginder Singh, HoD, Mechanical Engg.
- (11) Prof. Charu Pathak, HoD, ECE
- (12) Dr. Sandeep Sharma, HOD, Sciences
- (13) Dr. Rashee Singh, HoD, Education.
- (14) Dr. Pragati Chauhan, HoD, Mgt. & Com.
- (15) Dr. Arpit Sand, Program Head, Chemistry
- (16) Dr. Aparna Vyas, Program, Head, Mathematics
- (17) Prof. Sushmita Ray, Professor, CSE
- (18) Prof. Jyoti Pruthi, Professor, CSE
- (19) Prof. Meena Kapahi, Professor, Chemistry
- (20) Dr. Deepa Arora, Associate Professor, Maths
- (21) Dr. Savita Sharma, Associate Professor, Education
- (22) Dr. Subodh Saluja, Assoc Prof, Management
- (23) Dr. S. K. Bose, Associate Professor, Law
- (24) Dr. Kaveri Sharma, Associate Head, Law (Special Invitee)
- (25) Dr. K. Singh, Registrar / Member Secretary

The following members attended the meeting online:

1. Prof. Raj Senani, Professor Emeritus & Former Director, NSIT, Dwarka, N.D
2. Prof. V.K. Ahuja, Hon'ble Vice-Chancellor, NLU & Judicial Academy, Guwahati

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3. Prof. Anita Rastogi, Professor, JMI, New Delhi.
4. Prof. S. K. Garg, Professor & HoD ME, DTU, Delhi
5. Prof. M.L. Singla, Former Professor, Faculty of Mgt. Studies, DU, Delhi
6. Prof. Sangita Kansal, Professor, DTU, Delhi

Prof. Vikram Goel, Professor, CSE, IIIT-Delhi, Prof. D. Kumar, Professor, Chemistry, DTU, Prof. Kanupriya Sachdeva, Professor, MNIT, Jaipur could not attend the meeting due to their other professional engagements. They were granted leave of absence by the Chair.

Following are the minutes of the meeting:

The Registrar welcomed all the members present in the meeting and requested the Vice Chancellor to open the meeting with his brief remarks.

### **20.1. Opening Remarks by the Chairman**

The Chairman, welcomed all the honourable members present in the meeting and informed the Council members about some of the activities carried out by the University after the last Academic Council meeting,

- Manav Rachna family paid heartfelt tribute to the great visionary and philanthropist Dr. O.P. Bhalla Ji on his birth Anniversary 4<sup>th</sup> April, 2023 which is celebrated as Founder's Day. It is quite satisfying when we look back at the journey, MREI have taken in past 26 years. His life stands for providing best student learning experience and creating better human beings.
- Manav Rachna celebrated its Annual Cultural Fest "Resurrection 2023" on March 30 & 31. The students participated with great zeal. The singer rapper and music Director Millind Gaba enthralled the audience on this occasion.
- Admission process for the session 2023-24 has started. MRNAT phase 1 was conducted on 21<sup>st</sup> January and MRNAT Phase II conducted on 23<sup>rd</sup> April. The students are being guided for taking admission in various disciplines as per their aptitude.
- This year Convocation was held on 26th April, 2023, 440 UG, PG & 29 PhD degrees were awarded. During the Convocation Honoris Causa, Doctor of Science (D.Sc.) was awarded to Prof. Yogesh Singh, Vice-Chancellor, Delhi University and Honoris Causa, Doctor of Philosophy (Ph.D.) to three eminent persons from different fields namely, Shri Gagan Narang, Olympian & Vice President IOA, Shri Naveen Maheshwari, Director Allen Career Institute, Kota and Ms. Raj Kamal Vempati, Head, Human Resource, Axis Bank.
- Sixth edition of the annual technical festival of Manav Rachna Educational Institutions "INNOSKILL 2023" was a sight to behold. 1500+ Students from all across India participated

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in this technical fest. The path to sustainability and concept of inclusivity was at the forefront of this innovation festival. Innoskill 2023 witnessed a plethora of inventions, Skill-based competitions, Exhibitions and Visual Presentations with Hands-on Workshops. Prizes worth 1.7 Lakh were distributed among the winners.

- Enriching our hearts and soul with his tenure as a scholar, student, and politician and most importantly a man who witnessed the republic of India, Padma Vibushan Dr. Karan Singh had an exciting interaction with students and Faculties of Manav Rachna. The legend explained the importance of a healthy body and mind, and the significance of being spiritual. He emphasized on treating mind and body right and how with simple ways, one can lead a healthy lifestyle.
- Mr. Rakeysh Omprakash Mehra, a highly regarded Indian Film Director and Screenwriter, is one such brilliant mastermind of artistic representation and visionary visited the campus on April 1st, 2023. He unveiled Alumni Achiever's Book - Utkrisht Icons of Manav Rachna 2023. Students listened to his invaluable words of wisdom.
- To celebrate World Environment Day 2023, the School of Education & Humanities, Manav Rachna University, in association with the Hazardous Substances Management Division, MoEFCC, under the Central Sector Scheme, organized Green Fiesta'23 - Solid Waste Management Festival.
- **MOUs signed**
- University has signed MoU with the K.L. Mehta Dayanand College for Women, NIT, Faridabad for establishing a long-term mutually beneficial association for research, to promote academic collaboration and to explore the ways and means to achieve self-reliance.
- The University has also entered into a MOU with M/s V5 Global Services Pvt. Ltd. to train students while they are in campus to be industry ready.
- MOU also signed between "YOUNG MINDS" for recruitment, training, HR consultant company and School of Management & Commerce of MRU with a perspective for guiding students for internships, placements, entrepreneurship activities & career related decisions and exposure.
- MOU signed between "MENTORx" and School of Management & Commerce, MRU to create a culture of start-ups. The main focus will be on awareness of entrepreneurship, skill development & how to get funding for students projects.

#### **Faculty and Student's Achievement:**

Minutes of the 21<sup>st</sup> Academic Council Meeting held on 30.05.2023



**(a) Award & Recognition to the Faculty:**

1. Ms Chaitali Wadhwa was Invited as a Speaker in a Workshop on "AIAC Mooting Workshop- Strengthening your oratory skills in a moot competition" online on 24th February 2023.
2. Dr S.K Bose was invited as a Key Note Speaker in National Conference on Emerging Trends in Intellectual Property & Cyber Laws at Bharti Vidyapeeth , Pune & BR Ambedkar National Law University Sonipath on 24th and 25th February 2023.
3. Dr. Kriti Dagar, Assistant Professor Education delivered an expert Talk on "Economics for grade 12" under "teaching-learning interventions for inclusive classrooms" held at Central Institute of Educational Technology, NCERT, New Delhi-110016 on 03 and 13th January, 2023.
4. Mr. Sharv Datt Anand was invited as a guest speaker in a national webinar on the topic "Teaching Learning Interventions in Inclusive Classrooms" by NCERT four times on 31st January 2023, 25th March 2023, 29th April 2023, 17th May 2023.
5. Mr. Sharv Datt Anand was invited as guest speaker By CRC Gorakhpur, Ministry of Social Justice and welfare to speak on the topic "Present Scenario Of Inclusive Education in India" on 3rd May 2023.
6. Dr. Kriti Dagar and Mr. Sharv Datt Anand, Assistant Professor, Education jointly published a Book Chapter titled " COVID 19 impacting Teaching-Learning Process: Issues, Threats & Opportunities" by Notion Press with ISBN No: 979-8890660183 on 18th May 2023.
7. Dr. Manpreet Kaur, Professor, CSE Certificate of Recognition for having an instrumental role in Active MRU Chapter of SWAYAM-NPTEL. She also received reviewer certificate in DELCON 2023 (2nd IEEE Delhi Section Conference) that was organized by Chitkara University during Feb 24-26, 2023.
8. Ms. Priyanka Gupta, Assistant Professor, CSE, received Professional Certification from Microsoft Certified Azure AI Fundamentals Global Certificate.
9. Dr. Sanjay Singh, Associate Professor, CSE, received Educator Certification from Google Developer.
10. Dr. Jyoti Pruthi, and Dr. Hanu Bhardwaj, Professor, CSE received Professional Certification from Professional Scrum Master (PSM-1).



11. Dr. Vineet Dubey, Assistant Professor, ME chaired a session in “International Conference on Materials Processing and Characterization 2023” in the month of March 2023.

12. Dr. Arpit Sand, Associate Professor, and Ms. Jaya Tuteja Edited the book titled “Properties and Applications of Superabsorbent Polymers-Smart Applications with Smart Polymers” and “Lignin-Chemistry, Structure and Applications” respectively and these were published in Springer and Intech respectively.

13. Dr. Pragati Chauhan, Ms. Vandana Zutshi Bhat were given the recognition at MSME start up day - event on 17th Jan 2023 at Scope Convention Centre, Lodhi Road New Delhi.

14. Dr. Aditya Sharma, Assistant professor has received following two projects worth Rs. 18,2500/- and 129500/- from Haryana State Council for Science, Innovation and technology, Panchkula (2022).

(i) *Development and testing of Ion implantation induced modified charge transport layers in lead deficient perovskite solar cells for enhancing the efficiency/stability and reducing the toxicity*

(ii) *Development and applications of nano-particles incorporated bioactive surgical scaffold for bone tissue regenerative therapy*

**(b) STUDENT’S ACHIEVEMENT:**

1. Mr. Rudranand Sahu, 3rd-year student of the Electronics and Communication Engineering with Specialization in VLSI design and Verification won 1st prize along with his team members in the E-Yantra event organized in IIT-Bombay.

2. Mr. Ashwani Soni 2K21CSUN01108, Semester IV, Mr. Pratyush Mishra 2K21CSUN01137, Semester IV, Mr. Dheeraj 2K20CSUN01033, Semester VI, Secured All India Rank 104 along with Certificates of Appreciation, ACM International Collegiate Programming Contest.

3. Ms. Khushi Kathuria 2K19CSUN04012, Semester VIII, Chairperson, IEEE MANAV RACHNA University Student Branch received the J.K Pal Memorial award.

4. Simar Jyot Singh Narang 2K20CSUN04047, Semester V, General Secretary of IEEE MRU (BTech CSE AIML, 3rd year), was awarded the "WIE COORDINATOR" for his contributions to the IEEE Delhi Section Student Network team in 2022-2023) in IEEE Delhi Section Students Activity Committee ceremony 2023, organized at NorthCap University, Haryana.



5. Ms. Charu Goyal 2K20CSUN04011, Semester V, Chairperson –IEEE MRU Women In Engineering Affinity group received Outstanding WIE Volunteer Award, Award in IEEE Delhi Section Students Activity Committee ceremony 2023, organized at NorthCap University, Haryana.
6. Mr. Surya 2K21CSUN01044, Semester IV, Mr. Nidhish 2K21CSUN05022, Semester IV, Got Letter of Appreciation and also Internship.
7. Mr. Rajat 2K22CSUN06022, Semester II, Mr. Jai 2K22CSUN06011, Semester II, Ms. Riya 2K22CSUN06023, Semester II, Got Position 1 & 2 in INNOSKILL 2023, awarded from MANAV RACHNA University
8. A team of 9 students participated in ATV event which is held in the month of March 2023 at Pune, Maharashtra for 5 days (1st to 5th March 2023). The ATV vehicle is fabricated in MRU Fabrication centre.
9. A team of Students, Mr. Tuhin Trafdar 2K20CSUN04051, Semester VI, Mr. Harsh Vashisth 2K20CSUN04022, Semester VI, and Mr. Rehan Aziz 2K20CSUN04043, Semester VI, won 2nd prize in INNOSKILL 2023 under Srijan vertical in AIML project category.
10. Yana Kaushik, Abhijit S. Nair, Chirag Dev of BBA-FAA Sem-4 participated in Global Finance Conclave 23 Student Debate: Arthavivada! organized by O.P. Jindal Global University final round on 18th Feb 2023 & won the Runner Up prize.
11. The team of two students , Sania and Amisha of BA LLB , 2nd Semester , was adjudged the Semi Finalists in the North Cap National Moot Court Competition held on 14th and 15th April 2023.
12. Aarushi Sharma of BA LLB , IInd Semester stood First in the event in 9th Open Girls Sports Meet held on 5th May 2023.
13. Vaishali Garg- B.A B.Ed semester 2 participated and won the first prize in the 9th Open Girls Sports Meet 2023, held on 5th May, 2023.
14. Four Students from ME & ME SMA 4th Sem successfully completed the NPTEL course on “Material Science & Engineering Course” in the month of April 2023.
15. Ishpreet Kaur from B.Tech ECE VLSI Semester 2 has bagged 1st position in Basketball in 9th Open Girls Sports Meet 2K23 organized by MREI on 5th May 2023. She also got 2nd position in Relay Race.
16. Afjal Ali and Shamit Bhardwaj, Students of B.Tech ECE Sem 6 successfully completed an 8 weeks NPTEL certification Course on “Human Behaviour” in April 2023.



17. University submitted SSR for NAAC on 5th April, 2023 DVV as submitted on 7th May 2023, 26 Queries were received and answered within specified time which are accepted and finally Waiting for the visits.

18. University also submitted SAR for NBA to the program BTech.CSE. Waiting for the visit

### **Research, Projects, Patents etc**

Research Papers published in Scopus	524
Patents published	50
H index	33
Projects granted	03
Projects submitted	06
Research Conference/workshop/Seminar planned	11
Activities conducted by IIC/IPR Cell/IIC/Pre-Incubation Unit	26

Vice Chancellor concluded his remarks and requested the Registrar to take up the agenda for discussion. Registrar, then, took up the agenda items one by one for deliberation as under.

### **21.2 Confirmation of the Minutes of the 20th Meeting of the Academic Council held on 10.12.2022**

Hon'ble Members of the Council were informed that Minutes of the 20th Meeting of the Academic Council, held on 10.12.2022 were circulated to all the members through email on 22.12.2022, no comments were received from any member. The Council was requested to confirm the minutes.

**Decision: Academic Council confirmed the minutes of last meeting of the Council.**

### **21.3 Action Taken Report on the decisions of the 20th Meeting of the Council.**

The Registrar apprised the Members about action taken on the decision of the last meeting of the Academic Council and requested to take it on record.

**Decision: The Council took the Action Taken Report on record.**

### **21.4 Matter for information**





Hon'ble Members were informed about various activities carried out during the last five months.

**(i) MOU signed with other Institutions/organizations ;**

**(a)** Manav Rachna University has signed MOU with the K.L. Mehta Dayanand College for Women, NIT, Faridabad. The collaborative platform will connect the faculties, students and researchers across different disciplines.

**(b)** The University has also entered into a MOU with M/s V5 Global Services Pvt. Ltd. to train students while they are in campus to be industry ready. With intention to meet the objectives of the trained Manpower, both organisations have joined hands to bring BBA with specialization in five areas, the internship and job opportunities to be made available to students of BBA & MBA programs. This will help the students getting practical exposure through internship and real life learning to be job ready.

**(c)** MOU signed between "YOUNG MINDS" - a recruitment, training & HR consultant company and School of Management & Commerce MRU with a perspective for guiding students for internships, placements, entrepreneurship activities & career related decisions and exposure.

**(d)** MOU signed between "MENTORx" and School of Management & Commerce, MRU to create a culture of start- ups. The main focus will be on awareness of entrepreneurship, skill development & providing funding opportunities to the students.

**(ii) Faculty and Student's Achievement**

Details of Faculty and Student's Achievement have already been mentioned in opening remark of the Hon'ble Vice Chancellor.

**(iii) Report about Convocation 2022**

Hon'ble members of Academic Council were informed that University convocation was held on 26th April 2023 in the campus. The convocation has presided over by Hon'ble Chief patron Mrs. Satya Bhalla. During the Convocation Honoris Causa, Doctor of Science (D.Sc.) was awarded to Prof. Yogesh Singh, Vice-Chancellor Delhi University and Honoris Causa Doctor of Philosophy (Ph.D) to three eminent persons from different fields namely, Shri Gagan Narang, Olympian & Vice President IOA, Shri Naveen Maheshwari, Director Allen Career Institute, Kota and Ms. Raj Kamal Vempati, Head, Human Resource , Axis Bank. Besides, 409 UG and 31 PG and 29 Ph.D degrees were awarded to the pass out



students and Ph.D scholars. In Addition, 13 gold medals and 5 outstanding Achievers award in different categories i.e Research, Professional, Community involvement and Creative Arts were also awarded to the 2022 students. The convocation concluded with convocation address of Prof. R. A. Mashelkar, former Director General, CSIR.

**(iv) Introduction of Research Fellowship scheme to Full-Time Ph.D. scholars**

The Academic Council was informed of the modified scheme & guidelines for Research Fellowship to be awarded to Full-Time Ph.D. Research scholars. The scheme aims to encourage students and teachers to facilitate full time research in the University. Full Time Research scholars are eligible for research fellowship from the date of commencement of the course work @ 31000/- per month for two years which will be raised to Rs.35000/- p.m.in third year subject to submission of satisfactory progress report at the end of every semester (July & Jan). These scholars shall also be eligible to receive a contingency grant of Rs. 15000/- per annum. A detailed guideline of Research Fellowship is annexed as **Annexure No. I.**

**(v) Courses offered under Project Based Learning (PBL) Mode**

Academic Council was informed that School of Engineering had offered six courses namely, Modern Architecture, Natural Language Processing Patterns, Unsupervised Learning and Neural Network, Cloud Computing, Big Data, Object Oriented Software Engineering, in 4th and 6th Semester of Computer Engineering, two courses namely Manufacturing Processes, Rapid Prototyping in 2nd semester in Mechanical Engineering and two courses, namely, Electronic Design Workshop and PLC Workshop in 7th Semester of ECE during the Academic Year 2022-23 in PBL mode.

**(vi) Summary of Research, Start-Ups and Innovation activities.**

Hon'ble members were also apprised about the Major R& D activities carried out during last five months under the aegis of R&D cell are listed below for information of Hon'ble members;

S.No.	Parameters	20 <sup>th</sup> AC Meeting dated 10.12.2022	21 <sup>st</sup> AC Meeting dated 30.05.2023	Details attached as
		Aug. 22 to Nov. 22	Dec. 22 to April 23	
1	No. of research publications in Journals, Conferences & Book	36	37	



	Chapters			
	Total No. of Scopus / WoS Publications	478 / 208	524 / 212	Annexure-II (a)
	University h-Index	31	33	
	No. of Patents Filed / Published/ Granted	Published -03 Filed-02	Published 50	
2	No. of research projects granted/submitted to funding agencies (HSCSIT, DST, IIT Bhilai /UGC-DAE CSR, DST-SERB, ICSSR, Niti Aayog and Ministry of Energy Storage, Technology Mission Division-DST, CSIR, ICMR)	Granted -01 (Rs. 18.25 Lacs)  Submitted -09 (Rs. 550.77 Lacs)	Granted -03 (Rs. 29.11 Lacs)  Submitted -06 (Rs. 215.29 Lacs)	Annexure-II (b)
3	No. of startups incubated in campus	03	Nil	Annexure-II (c)
4	Research Conferences /Workshop/ Seminars organized	15	11	Annexure-II (d)
5	Research Conferences/Workshop/ Seminars Planned	05	02	Annexure-II (e)
6	Activities conducted by IIC/IPR Cell/Innovation & Incubation Centre/ Pre-Incubation Unit	25	26	Annexure-II (f)

**Decision: Academic Council took the information on record.**

### 21.5 Matter for ratification

Academic Council was apprised about the Action Taken by the University and requested to ratify the same.

- i) Increase in intake of B.Tech. CSE program from 240 to 360
- ii) Additional 29 degrees (UG-13 and Ph.D-16) awarded during Convocation

**Decision: Academic Council ratified the Action taken by the University**

### 21.6 Approval of the Scheme and Syllabus for 1st Year B.Tech. Robotics and Artificial Intelligence along with PSOs for batch 2022-2026

Academic Council deliberated on the complete scheme and syllabus B.Tech. Robotics and AI prepared by the Dept. of Computer Science and Technology, an interdisciplinary course offered jointly with Mechanical Engineering, Electronics, and Communication Engineering to meet the needs of the industry and approved the same unanimously.



**Decision: Academic Council approved the syllabus of the B.Tech. Robotics & AI for the first Year. Approved Syllabus annexed as Annexure No.III**

**21.7 Splitting of Course Digital Electronics & Microcontrollers (ECH308B-T) offered to the fifth Sem. students of B. Tech. Computer Science& Engineering**

Hon'ble Members were informed that the Department of Electronics and Communication Engineering has proposed to split the course Digital Electronics & Microcontrollers (ECH308B-T) offered to the fifth Sem. students of B. Tech. Computer Science& Engineering into two separate courses, namely, **Digital Electronics** and **Microprocessor& Micro-controllers**. The proposal is made based on feedback received from stakeholders and faculty as the course was found to be extensive and difficult to cover within a single course. The BoS of the department has concurred with the proposal. This will help to improve learning outcomes. The Council deliberated on the proposal of School of Engineering, agreed with the recommendations of the BoS, and approved the same.

**Decision : Academic Council approved the proposal.**

**21.8 Approval of online MOOCs offered by Infosys-spring Board, Coding Ninja, and NPTEL for credit transfer**

The proposal of the School of Engineering to allow students to enrol for the online courses offered by Infosys-spring Board, Coding Ninja, and NPTEL and transfer the credits earned besides other electives offered by the Departments was deliberated by the Hon'ble members and unanimously approved. These courses are recommended by the Departments based on the need and interest of individual student.

**Decision: Academic Council approved the online MOOCs offered by Infosys-spring Board, Coding Ninja, and NPTEL for credit transfer.**

**21.9 Introduction of additional electives in the syllabus of MBA Business Analytics in the elective baskets introduced from 2nd year (academic year 2023-24).**

Academic Council was apprised of the proposal of the Department of Management and Commerce regarding introduction of elective courses in the second year of MBA Business Analytics in four broad areas i.e - **Marketing, Finance, Human Resource, Operations & Supply Chain** to further enrich the course curriculum and to attract better admissions. Hon'ble members were requested to consider and approve the same.

**Decision: Academic Council approved the proposal of the Department of Mgt & Commerce to introduce these in the basket of electives of the Department.**



**21.10 Change of nomenclature of BBA Health Care Management to BBA-Global Health Care management and Introduction of new subjects & syllabus revision of some of the existing courses of BBA- Global Health Care Management from the academic year 2023-24.**

Academic Council was apprised that Department of Management & Commerce, proposed the following:

(i) To change in nomenclature of BBA - Health Care Management Program from BBA HCM program to BBA- Global Health Care Management.

(ii) To introduce new subjects & revision of syllabus in the existing subjects from academic year 2023-24, to meet the global expectations.

The following new subjects with relevance to Global healthcare management are also proposed to be added in the respective semester as shown below;

- Introduction to Global Health (SEM-1)
- Hospital hazards & waste management (SEM-2)
- Disaster Management (SEM-4)
- International Medical Tourism (SEM-6)

Further, the syllabus of the following subjects of BBA-HCM were revised & proposed to be offered in the programme.

- Healthcare Communication – ( SEM-2)
- Management Of Medication - (SEM-4)
- Public Health & Global Health Scenario - (SEM-6)

The Subject “Public Health” proposed to be named as “Public Health Administration”. The Hon’ble members deliberated over the proposal and approved the same.

**Decision: Academic Council approved the proposal of adding the proposed courses as recommended by the Department of Mgt & Commerce based on the recommendations of BoS of the Department.**

**21.11 MOOCs to be offered to cover up credits prescribed for BBA programs in the Academic Program Regulations, 2020.**

Hon’ble members of the Council were informed that the Department of Management of Commerce intends to offer MOOCs to the students of BBA programs to compensate for any variation in the credit limit mentioned in the academic regulation of the BBA program



created by difference in credits of various electives

- ❖ Two MOOCs will be introduced in 5th & 6th SEM respectively in the BBA Business Analytics Program from the year 2023-24.
- ❖ One MOOCs “Climate Change - Financial Risk & Opportunity” to be introduced in BBA-Finance & Accounts (II Sem) for the students admitted in Academic Year 2022-2023.

The Academic Council was requested to consider the proposal and approve the same

**Decision: Academic Council approved the proposal submitted by School of Management and Commerce.**

### **21.12 Addition of a new subject each in 5th and 6th semester of BBA-Business Analytics for the batch 2021-24.**

Academic council was apprised that Department of Management and Commerce has proposed to introduce two new subjects in 5<sup>th</sup> & 6<sup>th</sup> Semester of BBA-Business analytics as below:

- Finance analytics of 3 credits (2-0-2-0) is included in the 5th semester.
- Marketing analytics of 3 credits (2-0-2-0) is included in 6th semester.

Further, a MOOC course of 3 to 4 credits also proposed to be introduced in place of Google suits (2 credits) in the 6th Semester. BoS of Department recommended the same.

**Decision: Academic council approved the proposal of adding Financial Analytics and Marketing analytics. It also approved to replace Google suit by another courses relevant to different programmes.**

### **21.13 Consideration of MRU (LL.B) Regulations, 2022**

Academic Council was informed that LL.B (3 yrs) program started by the Department of Law from the AY 2022-23 with due approval of Bar Council of India. Program is presently in second semester and hence, it is necessary to frame the detailed academic regulation for this program. A draft regulation prepared for LL.B (3Yr) program was presented in the meeting. Hon’ble members deliberated over the proposed regulations and suggested revision in the same for some of the clauses and recommended for placing the revised regulations before the Board for approval.

**Decision: Academic Council concurred with the MRU (LL.B) Regulations, 2022 with some modification and authorised Vice Chancellor to approve the revised Regulations and place it before the Board for approval.**



### **21.14 Consideration of MRU Prevention of Unfair Means (First Amendment) Regulations, 2023**

Academic Council was apprised that based on the feedback received from the faculties and the examination branch, it was felt necessary to incorporate uses of electronic gadgets like mobiles etc during the examination as tool of unfair means and prescribe proper punitive action for the same. Accordingly, MRU (Prevention of Unfair Means) Regulations, 2016 which was approved by the Board of Management and notified for implementation has been amended. In the amended regulations, the definitions have been further elaborated by adding the offences, which are treated as unfair means, clause on impersonation added, provision on Action by the Invigilator and COE have been re-framed in light of above. It was deliberated by the Council and concurred with minor modification and recommended for placing the revised regulations before the Board for approval.

**Decision: Academic concurred with the MRU Prevention of Unfair Means (First Amendment) Regulations, 2023 with minor modification and authorised Vice Chancellor to approve the revised Regulations and place it before the Board for approval.**

### **21.15 Consideration of MRU Students Promotion Policy (First amendment) Regulation, 2023**

Academic Council was informed that the MRU (Students Promotion) Regulation, 2019, which is in force was found to be lacking with some provisions due to which students were mis-interpreting the chances provided for improvement/supplementary examinations. Hence, some additional provisions, which could make it more lucid has been provided in the revised regulations suggested by the committee constituted by the University for the purpose.

**Decision: Academic Council consented with MRU Students Promotion Policy (First amendment) Regulation, 2023 with some modification and authorised Vice Chancellor to approve the Regulations and get the same approved by BOM.**

### **21.16 Any other matter with permission of the Chair.**

#### **1. Introduction of Courses on (i) Universal Human values (UHV) (ii) Heartfelt enabled leadership mastery and (iii) Science of Consciousness in the School of Education & Humanities**

The Council considered the proposal regarding Introduction of **(i) Universal Human values (UHV) (ii) Heartfelt enabled leadership mastery and (iii) Science of Consciousness in the**



**School of Education & Humanities** in the School of Education & Humanities as mandated by AICTE . It deliberated on it and accepted the proposal.

**Decision: Academic Council approved the proposal to introduce the above courses in the basket of electives of school of Education & Humanities.**

The meeting ended with a vote of thanks to the Chair.

  
(Dr. K. Singh)

Registrar / Member Secretary



Dated 14.06.2023

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Copy to:

- 1) PS to Chancellor for kind information to Hon'ble Chancellor
- 2) PS to VC for kind information to Hon'ble Vice Chancellor
- 3) PS to VP, MREI for kind information to Hon'ble Vice President
- 4) Prof. V.K. Ahuja, VC, National Law University and Judicial Academy, Assam
- 5) Prof. Sangita Banga, Pro Vice Chancellor
- 6) Prof. S.K. Garg, HOD-ME., Delhi Technological University, Delhi
- 7) Prof. Raj Senani, Professor Emeritus & Former Director, NSIT now, Netaji Subhash University of Technology, Dwarka, Sector-3, New Delhi-110078.
- 8) Prof. Anita Rastogi, Professor, JMI University, Maulana Mohammad Ali Jauhar Marg, Ghaffar Manzil Colony, Jamia Nagar, Okhla, New Delhi, 110025.
- 9) Prof. Kanupriya Sachdeva, Professor, MNIT, , Jawahar Lal Nehru Marg, Jhalana Gram, Malviya Nagar, Jaipur, Rajasthan 302017.
- 10) Prof. Devender Kumar, Professor, Delhi Technological University, Bawana Rd, Delhi Technological University, Shahbad Daultpur Village, Rohini, Delhi, 110042
- 11) Prof. M.L. Singla, Professor, Faculty of M-anagement Studies, Delhi University
- 12) Prof. Vikram Goel, Professor, Comp. Sci. & Engg, IIT-Delhi
- 13) Prof. Sangita Kansal, Professor, Department of Applied Mathematics, DTU
- 14) Prof. Shruti Vashisht, Dean, Academics & Engineering
- 15) Prof. Pradeep Kumar Varshney, Dean, Research & Applied Sciences
- 16) Prof. Parul Jhajharia, Dean, Management and Commerce.
- 17) Prof. Geeta Thakur, Dean, Student welfare
- 18) Prof. D.K. Sharma, Dean, Examination
- 19) Prof. Manpreet Kaur, HoD, Computer Science & Engineering
- 20) Prof. Joginder Singh, HoD, Mechanical Engg.

Minutes of the 21<sup>st</sup> Academic Council Meeting held on 30.05.2023



- 21) Prof. Arpit Sand, Program Head, Special invitee
- 22) Prof. Sandeep Sharma, HoD Sciences
- 23) Prof. Dr. Aparna Vyas, Program Head, Special Invitee
- 24) Dr. Rashee Singh, HoD, Education.
- 25) Dr. Kaveri Sharma, Associate Head, Law & special invitee
- 26) Dr. Pragati Chauhan, HoD, Management
- 27) Dr. Charu Pathak, HoD, ECE
- 28) Prof. Sushmita Ray, Professor, CSE
- 29) Prof. Jyoti Pruthi, Professor, CSE
- 30) Prof. Meena Kapahi, Professor, Chemistry
- 31) Dr. S.K. Bose, Assoc. Professor, Law
- 32) Dr. Deepa Arora, Assoc. Professor, Maths
- 33) Dr. Subodh Saluja, Assoc Prof, Management
- 34) Dr. Savita Sharma, Asst. Professor, Education



**MANAV RACHNA UNIVERSITY****GUIDELINES FOR RESEARCH FELLOWSHIP (RF) SCHEME****INTRODUCTION**

The scheme aims to encourage students and teachers to facilitate full research in the University.

**OBJECTIVE**

To provide an opportunity to students to undertake research leading to Ph.D in all the domains mainly in Engineering, Management, Sciences, Social Sciences, Education and Law etc.

**ELIGIBILITY**

The upper age limit for Research Fellowship (RF): 35 years for men as on 1<sup>st</sup> January/1 July of the year of application and 45 years for women. The candidates must have at least a first-class master's degree with a second-class bachelor's degree 55% high, or (second-class master's degree (55% & above) with a first-class bachelor's degree).

**PROCEDURE FOR APPLYING:**

The applications are invited through circulation or making advertisement in leading news paper. Students who have completed their master's degrees and desire to pursue research may send their applications to the university.

**PROCEDURE FOR APPROVAL**

The applications received are placed before a short listing/screening committee constituted for this purpose. The short listed candidates shall be required to appear before the selection committee to finalize the names for the award of RF. The decision of the Vice Chancellor is final and binding. The Ph.D office of the University shall convey the provisional intimation of selection to the candidate. The University reserves the right to withdraw/cancel the award.

**NATURE OF ASSISTANCE AVAILABLE UNDER THE Fellowship:**

The number of slots and of the Research Fellowship shall be:

- Research Fellowship (RF ): 10 per semester
- The maximum tenure of fellowship is 3 years



It is expected that the concerned departments will monitor the progress of the Research Fellow on regular basis (at least once a semester). The Fellow should not accept or hold any other position, paid or otherwise, or receive emoluments, salary, stipend etc. from any other source during the tenure of the award.

The fellowship may be terminated at any time during the tenure if and the decision of the University shall be final and binding. The tenure of the fellowship is for a maximum period of 3 years from the date of commencement of course work, subject to satisfactory progress report of the fellow or submission of Ph.D. thesis, whichever is earlier. However, no extension is permissible beyond the total tenure of 3 years. No fellowship is payable after 3 years and no extension is permissible beyond it.

The Financial assistance available under the scheme is as follows:

Research Fellowship Rs. 31,000/ per month during first two year and Rs. 35,000/- per month in 3<sup>rd</sup> year.

Contingency @ Rs.15,000/-p.a.

#### **CONTINGENCY FUND UTILIZATION**

The utilization of contingency fund is permissible only for the following purposes:

- (a) Purchase of books/journals/monographs etc. related to the subject of research not available in any of the University Libraries. However such purchase shall be routed through the Central Library of the University for specific utilization by the research assistant for research work only and shall always remain the property of the University
- (b) Photographic and other media material of relevance required for research
- (c) Field work and local travel maximum of Rs. 2000/- month on prior approval of reporting officer
- (d) Computation and analytical charges for consultants
- (e) Re-prints and Off-prints of relevant research papers
- (f) Registration fee for attending conferences/seminars in India on prior approval of reporting officer
- (g) Any other specific research related requirement other than for capital goods and foreign travel, subject to prior approval of the University.



**Leave:**

Leave for a maximum period of 30 days in a year in addition to public holidays may be taken by a research fellow with the approval of the supervisor. However, they are not entitled to any other vacations, for example, summer, winter and pooja vacations. Women awardees are eligible for maternity leave at full rates of the fellowships for 135 days as per Government of India rules once during the tenure of their award. The awardee may in special cases may be allowed by the University leave without fellowship/associateship and contingency for a period not exceeding three months during the tenure of award on the recommendation of the supervisor/Head of department of the institution concerned. The period of leave without fellowship/associateship will be counted towards the tenure.

**PROCEDURE FOR MONITORING THE PROGRESS OF THE RESEARCH FELLOW**

The progress of the awardee is monitored by the concerned supervisor and DRC. The awardee is required to submit progress report of the work by the end of each semester (May and December duly signed by the supervisor & head of department (DRC Chairperson)).

**Feedback:**

- After completion of the Research Work the student will submit his/her research work in the INFLIBNET repository along with the research papers published.

**Outcomes**

The Research Fellow has to meet the minimum eligibility for publication as laid down in Ph.D Ordinance. Further, it is expected that the research Assistant will be required to publish at least two (2) additional research papers over and above these papers in SCI/ SCOPUS/SSCI/ABDC indexed journals (Clarivate authenticated). The same shall be communicated by the scholar to the office of Doctoral Programs with the copy of publication every year. The Research papers & Thesis must mention the affiliation to the Manav Rachna University.

**Note: The last 2 installments will be released only after submission of the successfully completing the viva voce Research work in the Repository.**



**Gap Period:**

The maximum gap period for continuation from M.Phil to Ph.D. under Doctoral Fellowship shall be 1 year. However the total tenure of fellowship will remain for 3 years.

**Paid Assignment/Job:**

The fellow shall not undertake any paid assignment during the tenure of the fellowship (Except in case of leave without fellowship up to one academic year during the entire tenure).

**OTHER CONDITIONS**

The Research Fellow, with the consent of the guide/head of department, shall be required to assist the university/institution in its academic work, including tutorials, evaluation of the test papers, laboratory demonstration, supervision of fieldwork, library activities like group seminars and symposia, provided such work as is assigned by HoD in consultation with supervisor but such work should not hinder the research programmes on hand. The total amount of time to be spent on such activities should not exceed ten hours a week.

**CANCELLATION OF FELLOWSHIP**

The fellowship is liable to cancellation or withdrawal in case of:

- Registration not done within one year from date of joining.
- Misconduct;
- Unsatisfactory progress of research work/failure in any examination related to M.Phil/Ph.D. or,
- He/She is found ineligible later.
- Any false information furnished by the applicant or any fraudulent activity by the Scholar/Fellow/Research Awardees shall lead to Penal action against him/her.

For Manav Rachna University

S/d  
(Dr. K. Singh)  
Registrar



**Research and Innovation Achievements of University  
(December 2022 to April 2023)****1. Research Publications:- 37**

**37 research papers** published by faculty and students in Scopus, Web of Science, SCI databases, conferences proceedings, book & book chapters. The details of research are as follows:-

**a) Journal Publications-24**

- i) Optical medical image encryption based on digital hologram in various domains, **R.Girija**, H. Singh & G. Abirami, Journal of Optics, <https://doi.org/10.1007/s12596-023-01186-x>, April 2023
- ii) Biocompatible stimuli responsive hydrogels of okra mucilage with acrylic acid for controlled release phytochemicals of *Calendula officinalis*: In vitro assay, Vandna Choudhary, **Shilpa Sharma**, Pawan Kr. Shukla, Amita Malik, Materials Today Proceedings, <https://doi.org/10.1016/j.matpr.2023.03.701>, April 2023
- iii) Quantum learning theory: A classical perspective for quantum image, **Sanjay Singh**, M.Thurai Pandian, Anku Kumar Aggarwal, Satya Prakash Awasthi, **Hanu Bhardwaj, Jyoti Pruthi**, Volume 80, Part 3, 2023, Pages 2786-2793, April 2023
- iv) Virtual accreditation peer review team visits – higher education accreditations: present and future directions, J. Srikanth Reddy, **Ritu Sharma**, Narain Gupta, Higher Education, Skills and Work-Based Learning, Volume: 1 Issue: 1, to Volume: 13 Issue: 2, April 2023
- v) Thermal modelling of cutting tool under different cutting environment in turning, Ajay Singh, **Vineet Dubey**, Anuj Kumar Sharma, Materials Today Proceedings, <https://doi.org/10.1016/j.matpr.2023.04.193>, April 2023
- vi) A cryptanalysis of elliptic curve cryptography based on phase truncation in the domain of hybrid gyrator Hartley transform, Hukum Singh, **R. Girija** & Manoj Kumar, Optical and Quantum Electronics, Vol. 55, Article number: 487, April 2023
- vii) Ion Implantation in Multifunctional Materials, **Jitendra Pal Singh**, Keun Hwa Chae, Dinakar Kanjilal, Fadei Komarov, Materials Letters, Volume 342, Issue-1, Art No. 134347, April 2023
- viii) Comparative study of dry machining with MQL assisted soybean oil in turning operation of AISI 304 steel, Abhishek Shukla, **Vineet Dubey**, Anuj Kumar Sharma, Materials Today: Proceedings, <https://doi.org/10.1016/j.matpr.2023.02.28>, March 2023
- ix) IndiGen Project and Its Application in Criminal Law in India, Abhinav Vardhan Sharma, **Somdutt Bhardwaj**, Journal of Forensic Science and Medicine, Volume-9, Issue-1, Page no. 70-75, March 2023
- x) Design and Performance Analysis of Low Power Fully Integrated Tunable Bandpass Filter, Nupur Mittal, Imran Ullah Khan, **Piyush Charan**, Materials Today: Proceedings, <https://doi.org/10.1016/j.matpr.2023.03.369>, March 2023



- xi) A review on the effect of residual stresses in incremental sheet metal forming used in automotive and medical sectors, **Gianender Kajal, M.R. Tyagi** & Gulshan Kumar, *Materialstoday:Proceedings*, Volume 78, Part 3, 2023, Pages 524-534, March 2023
- xii) An Experimental Analysis of Natural Heat Transfer between Rectangular Solid and Perforated Fins Having Different Perforation Characteristics, Smriti Mishra, Abhishek Yadav, **Prashant Bhardwaj**, *EVERGREEN Joint Journal of Novel Carbon Resource Sciences & Green Asia Strategy*, Vol. 10, Issue 01, pp366-371, March 2023
- xiii) A Bio-inspired VM Migration using Re-initialization and Decomposition based-Whale Optimization, **Shalu Singh**, Dinesh Singh, *ICT Express*, Volume 9, Issue 1, Pages 92-99, February 2023
- xiv) Dynamics Inside a Dual-Frequency Paul Trap in the Presence of Excess Micromotion, Anuranjan Kansal, Varun Saxena, **Charu Pathak**, *IEEE Transactions on Plasma Science*, Volume:51, Issue:2, Page No. 359 - 366, February 2023.
- xv) Optimizing the Parameters of Spark Plasma Sintering to Enhance the Hardness of MgO/TiC Composites, Sai Ashish Kumar Karanam, R. Rathinam. **Pradeep Kumar Mouria**, Arnold C. Alguno, Rey Y. Capangpangan, Tariku Achamyelah, Jose Luis Arias Gonzales, Vijay Kumar Sharma, T. Stephen Livingston, *Advances in Materials Science and Engineering*, Volume 2023, Article ID 1335481, 14 pages, February 2023.
- xvi) Sales impact in modern trade retail during festival big days, post wave 2 of covid-19, Hitesh Kakar, **Rashi Banerji** & Mandeep Singh, *The Seybold Report*, DOI 10.17605/OSF.IO/3ADG2
- xvii) Effect of different aluminium oxide based nanofluid concentrations on the efficiency of solar water desalination system, **Ajit Katiyar**, Naveen Kumar Gupta, *Journal of Thermal Engineering*, Vol. 9, No. 1, pp. 61–68, January 2023
- xviii) A Systematic Review on the Detection and Classification of Plant Diseases Using Machine Learning, Deepkiran Munjal, Laxman Singh, **Mrinal Pandey, Sachin Lakra**, *International Journal of Software Innovation*, Vol.11, Issue-1, January 2023
- xix) A framework to assess the smartphone buying behaviour using DEMATEL method in the Indian context, Shivani Bali, Vikram Bali, Dev Gaur, Sita Rani, Raman Kumar, **Priyanka Chadha, Yogita Sharma**, Chander Prakash, Padmakar Shahare, Shivani Kampani, Natalia Solopova, Saurav Dixit, Nikolai Ivanovich Vatin, *Ain Shams Engineering Journal*, <https://doi.org/10.1016/j.asej.2023.102129>, January 2023
- xx) A Novel Hybrid Approach for Intent Creation and Detection Using K-Means-Based Topic Clustering and Heuristic-Based Capsule Network, **Chandni Maggo**, Manjeet Singh, *International Journal of Information Technology & Decision Making*, <https://doi.org/10.1142/S0219622022500924>, December 2022
- xxi) Cefuroxime: A Potential Corrosion Inhibitor for Mild Steel in Sulphuric Acid Medium, S. Tanwer, **Sudhish Kumar Shukla**, *Progress in Color, Colorants and Coatings*, Vol.16 (2023), Page No. 125-138, December 2022
- xxii) Student Engagement and Academic Achievement as Precursors to Knowledge Management: Dynamics of Post COVID Offline Classroom Student Engagement and Achievement, **Manmeet Bali Nag**, Firdous Ahmad Malik, Shajara Ul-Durar, Gaurav K Mangar, *Journal of Content, Community & Communication*, Vol.16, Issue 8, Page No. 54-62, December 2022
- xxiii) Comprehensive Analysis of VM Migration Trends in Cloud Data Centers, Shalu Singh, Dinesh Singh, *Recent Patent on Engineering*, Volume 17, Issue 6, December 2022



- xxiv) Ionospheric and surface thermal parameters during three high magnitude earthquakes, **Ananna Bardhan**, Pooja Sharma, **Anshuman Sahai & Dinesh Kumar Sharma**, **The Journal of Indian Geophysical Union**, Volume 26, Issue 6, Page No. 491-504, November 2022

#### **b) Conference Publications: 08**

- xxv) Estimation of Position of Lathe Tool Using Edge Detection Technique in 2023 International Conference on Intelligent Systems, Advanced Computing and Communication (ISACC) organized by ASSAM UNIVERSITY, SILCHAR ASSAM, Shweta Kumari, Charu Pathak, Shruti Vashist, Prasant Kumar Mahapatra, April 2023
- xxvi) Optimization of Quality Power Distribution System using Artificial Intelligence in 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT) organized by Francis Xavier Engineering College, Tirunelveli Satya Prakash Awasthi, **Sanjay Singh, Urmila Pilania, Manoj Kumar**, A.S. Sindhu, A.S. Sarika, March 2023
- xxvii) Introduction to Deep Learning and its related case in 2022 International Interdisciplinary Humanitarian Conference for Sustainability (IIHC), organized by Sri Venkateshwara College of Engineering, Bengaluru, Sakshi, **R. Girija**, March 2023
- xxviii) Deep Anime Recommendation System: Recommending Anime Using Collaborative and Content-based Filtering, in 2022 4th International Conference on Advances in Computing, Communication Control and Networking (ICAC3N), organized by Galgotias College of Engineering & Technology, Greater Noida, Varun Prakash, Sagar Raghav, Shubham Sood, **Mrinal Pandey, Mamta Arora**, March 2023
- xxix) Application of AI techniques for Face Mask Detection in 2022 4th International Conference on Advances in Computing, Communication Control and Networking (ICAC3N), organized by Galgotias College of Engineering & Technology, Greater Noida, Metrey Arora, Yogesh Arora, **Mamta Arora**, March 2023
- xxx) Deep Learning based Breast Cancer Classification on Thermogram in 3rd IEEE 2022 International Conference on Computing, Communication, and Intelligent Systems, ICCIS 2022 organized by Sharda University, Greater Noida, Ankur Kumar Aggarwal, **Alpana, Mrinal Pandey**, February 2023
- xxxi) Time delay Independent of Bilateral Tele-Robotic System using Wave Variable Approach in 2022 8th International Conference on Signal Processing and Communication, ICSC 2022 organized by Jaypee Institute of Information Technology, JIIT, Noida, Naveen Kumar, **Niharika Thakur, Yogita Khanna**, January 2023
- xxxii) Prioritization in Data Warehouse Requirements—Incorporating Agility, Hanu Bhardwaj, Jyoti Pruthi, in International Conference on IoT, Intelligent Computing and Security, January 2023

#### **c) Books/Book Chapters-05**

- a. Role of Nanomedicine for Targeted Drug Delivery in Life-Threatening Diseases: Nanobiotechnology for the Livestock Industry Animal Health and Nutrition, **Jaya Tuteja, Arpit Sand**, ISBN 978-0-323-98387-7, February 2023
- b. Utility of Nanomedicine and Nanocarriers for Noninfectious Disease Treatment: Nanobiotechnology for the Livestock Industry, **Jaya Tuteja, Aparna Vyas & Arpit Sand**, ISBN 978-0-323-95325-2, February 2023





- c. Reliability Prediction and Its Simulation for a Friction Stir Processing Tool: Advances in Modelling and Optimization of Manufacturing and Industrial Systems, Smriti Mishra, **Prashant Bhardwaj**, Neha Bhadauria & Prashant Vashishtha, ISBN 978-981-19-6107-6, February 2023
- d. Integrated approach to testing and assessment and development in arsenic toxicology in Handbook of Arsenic Toxicology, **Megha Bansal**, <https://doi.org/10.1016/B978-0-323-89847-8.00020-1>, February 2023
- e. High Performance Classifier for Brain Tumor Detection Using Capsule Neural Network: Computer Vision and Machine Intelligence Paradigms for SDGs, J. S. Thanga Purni, R. Vedhapriyavadhana, S. L. Jayalakshmi, **R. Girija**, ISBN: 978-981-19-7169-3, January 2023

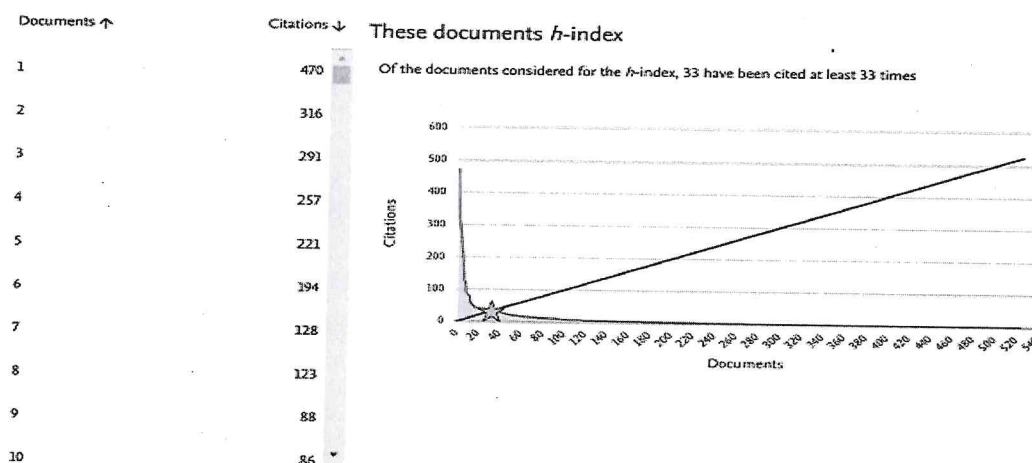
**d) Financial support given to faculty and students for presenting paper in conferences**

36 research papers were presented by faculty and students in conferences. Financial support provided to all of them.

**e) h-index and total research publications of University**

The total no. of research publications of University has increased to **524** from 478 as per Scopus database and University h-index also increased to **33** from 31. The h-index graph is given below:-

524 cited documents



**f) IPR Cell (Patent published / filed)**

50 patent applications got published, 48 patent applications published along with MRIIRS faculty members. The details are given below:-



S.No.	Title of Patent	Inventors Name	Application No.	Publication Date
1	System and Method For Product Identification For Visually Impaired Users	Tapas Kumar, Poonam Tanwar, <b>Hanu Bhardwaj, Prinima Gupta</b>	202211068867	02.12.2022
2	Orange Fruit Recognition System using Image Segmentation and Method Thereof	Neha Gupta, Indu Kashyap, <b>Chandni Magoo, Sachin Lakra</b>	202211068868	02.12.2022
3	Brain Tumor Detection Using Image Segmentation	Sabiha Imran, Sachin Sharma, <b>Manpreet Kaur, Susmita Ray</b>	202211068869	02.12.2022
4	Blockchain-Based Cloud File-Sharing System and Method Thereof	Charu Virmani, Shobha Tyagi, <b>Prinima Gupta, Manoj Kumar</b>	202211068870	02.12.2022
5	Position Based Attendance System (CN)	Rosy Madan, Srishty Jindal, <b>Manoj Kumar, Agha Ram Hussain</b>	202211068871	02.12.2022
6	Medical Assistance System and Method of Generating Reminders Using the Same	Savita, Nitasha Soni, <b>Susmita Ray, Chandni Maggo</b>	202211068865	02.12.2022
7	Voice Based Notice Board Using Android	Arko Bagchi, Tanu Dua, <b>Jyoti Pruthi, Prinima Gupta</b>	202211068866	02.12.2022
8	Rain Sensing Automatic Car Wiper	Meeta Singh, Gurpreet Singh, <b>Shruti Vashist, Yogita Khanna</b>	202211069264	30.12.2022
9	Electronic Voting System using Blockchain	Abhiruchi Passi, Pratima Manhas, <b>Sachin Lakra, Manpreet Kaur</b>	202211069265	30.12.2022
10	Eye ball Sensor for automatic Wheel Chair for paralyzed patients	Manoj Nayak, Nitesh Malhotra, <b>Niharika Thakur, Yogita Khanna</b>	202211069266	30.12.2022
11	Android Smart Ticketing Using RFID	Parul Gandhi, Vimlesh Singh, <b>Vijay Gill, Lokesh Bhardwaj</b>	202211069261	30.12.2022
12	Ultrasonic Blind Walking Stick	Charu Virmani, Irshad Ahmad, <b>Meenakshi Gupta, Bhanu Choudhary</b>	202211069263	30.12.2022
13	Cancer Prediction System using Data Mining Techniques and Method Thereof	Tapas Kumar, Kanchan Bhardwaj, <b>Agha Imran Hussain, Manoj Kumar</b>	202211069262	30.12.2022



14	Solar Energy Based Multipurpose Agricultural Robotic Vehicle	Dain Thomas, Vimlesh Singh, <b>Joginder Singh, Ajit Katiyar</b>	202211072396	30.12.2022
15	Solar Panel Power Generation using ESP32	Dinesh Chawla, Ashish Grover, <b>Ajit Katiyar, Jai Prakash Singh</b>	202211072397	30.12.2022
16	Sound Enabled Polling Machine for Visually Challenged Voters and Method Thereof	Abhiruchi Passi, Manoj Nayak, <b>Jyoti Pruthi, Manpreet Kaur</b>	202211072393	30.12.2022
17	Biometric Student Attendance System App	Shobha Tyagi, Vimlesh Singh, <b>Hanu Bhardwaj, Susmita Ray</b>	202211072398	30.12.2022
18	Brain Tumor and Alzheimer's Detection Flutter App	Rashmi Rameshwari, Manisha Vashisht, <b>Chandni Magoo, Susmita Ray</b>	202211072394	30.12.2022
19	Smart Solar Grass Cutter With Lawn Coverage	Manoj Nayak, Ashish Grover, <b>Jai Prakash Singh, Joginder Singh</b>	202211072395	30.12.2022
20	Smart Mosquito Repellant Device	Abhiruchi Passi, Pratima Manhas, <b>Yogita Gupta, Nitika Munjal</b>	202211075713	30.12.2022
21	Remote Assisted Refrigerator Door Monitoring with IoT	Pankaj Shakkarwal, Neha Chaudhary, <b>Yogita Gupta, Lokesh Bhardwaj</b>	202211075720	30.12.2022
22	Intelligent and Portable Rain Water Harvesting Kit for Smart Gardens Based on Biconvlstm	Prof. (Dr.) Hukam Singh, <b>Dr. R. Girija</b> , Varun Kumar Gera, Dr. S.L. Jayalakshmi, Ms. S.L. Jothi Lakshmi	202211073374 A	30.12.2022
23	Automated System for Governing Traffic Lights	Geeta Nijhawan, Ashish Grover, <b>Shruti Vashist, Lokesh Bhardwaj</b>	202211075717	06.01.2023
24	IR Based Obstacle Detection For Load Switching Project	Amrinder Kaur, Amit Atri, <b>Niharika Thakur, Yogita Gupta</b>	202211075718	06.01.2023
25	Plant Soil Moisture Monitoring System and Method Thereof	Abhilasha Shourie, Vimlesh Singh, <b>Meena Kapahi, Priti Gupta</b>	202211075723	06.01.2023
26	Smart Burglar Alarm - Complete Patent Application	Sushant, Richa Adlakha, <b>K. Deepa, Vijay Kumar Gill</b>	202211075714	06.01.2023
27	System for Monitoring a Health and a Fuel Usage of a Vehicle and Method Thereof	Devendra Vashist, Gurpreet Singh, <b>Piyush Mahendru, J. P. Sharma</b>	202211075722	06.01.2023



28	Energy Monitoring System	Anita Khosla, Dinesh Chawla, <b>Shruti Vashist, Charu Pathak</b>	202211075715	06.01.2023
29	Smart Shopping Cart	Poonam Tanwar , <b>K. Deepa</b>	202211075721	06.01.2023
30	Sustainable Rotating Biological Contactor (SRBC)	Sadiqa Abbas, Shagufta Jabin, <b>Meena Kapahi</b>	202211075724	06.01.2023
31	Distance Pruning	Basanta Kumar Bhuyan, Rajender Kumar, <b>Prashant Bhardwaj, Joginder Singh</b>	202211075716	06.01.2023
32	Home Automation System using MQTT Protocol and ESP32	Savita Sindhu, Shefali Singhal, <b>Niharika Thakur, Bhanu P. Choudhry</b>	202211075725	06.01.2023
33	Water Heater Bottle	Nitin kumar Waghmare, Seema Mahto, <b>Gianender, Ajit Katiyar</b>	202211075719	06.01.2023
34	Water Health Monitoring System and Method Thereof	Sushant, Anupama Rajput, <b>Roopa Rani</b>	202211075726	06.01.2023
35	First Information Report (FIR) Lodge and Assistance System and Method Thereof	Krishan Kumar, Neha Gadhok, <b>Jyoti Pruthi, Susmita Ray</b>	202211076379	06.01.2023
36	A novel motor vehicle window pane closure detector	Gurpreet Singh, Devendra Vashist, <b>J. P. Sharma, Bhanu P. Choudhry</b>	202211076376	06.01.2023
37	System for Generating Alert Against Infectious Diseases and Method Thereof	Jyoti Verma, Kanchan Bhardwaj, <b>Nitika Munjal, Meenakshi Gupta</b>	202211076380	06.01.2023
38	Intelligent Security System for Bank Lockers	Rachna Behl, Shobha Tyagi, <b>Manpreet Kaur, Chandni Maggo</b>	202211076374	06.01.2023
39	Video Calling/Recording Smartphone Stand	Pronika, Geeta Nijhawan, <b>Parneeta Dhaliwal, Hanu Bhardwaj</b>	202211076378	06.01.2023
40	Home Air Quality Monitoring System Project	Yaman Hooda, Vishnu Raj, <b>Ananna Bardhan, D.K. Sharma</b>	202211076381	06.01.2023
41	DIY Power Bank with Plasma Lighter	Anisha, Arko Bagchi, <b>Vijay Kumar Gill, Chandni Maggo</b>	202311000807	13.01.2023



42	Voice-Based Water Dispensing System and Method Thereof	Prerna Kakkar, Rajeev Kumar, <b>Yogita Gupta, Priti Gupta</b>	202311000810	13.01.2023
43	Anti-Theft System for Vehicle and Method Thereof	Vinay, Simple Sharma, <b>Jyoti Pruthi, Gianender</b>	202311000809	13.01.2023
44	Internet of Things (IOT) Based intravenous (IV) Fluid Monitoring and Alerting System and Method	Pratima Manhas, Monika Garg, <b>K. Deepa, Manpreet Kaur</b>	202311000806	13.01.2023
45	Student College Smart Card	Deepa Bura, Ramesh Chandra Sahoo, <b>Prinima Gupta, Susmita Ray</b>	202311000812	13.01.2023
46	Mobile Phone & Cash UV Disinfector for COVI	Sarvesh Kumar, Pardeep Kumar, <b>Anshuman Sahai, Deepti Maikhuri</b>	202311000811	13.01.2023
47	Image Forgery Detection System and Method Thereof	Kritika Taneja, Tanvi Gupta, <b>Shruti Vashist, Sachin Lakra</b>	202311000808	13.01.2023
48	Radio Frequency Identification (RFID) Based Travel Ticket Booking System and Method Thereof	Ashish Grover, Amrinder Kaur, <b>R. Girija, Charu Jain</b>	202311000813	13.01.2023
49	Blockchain-Based Finance Tracking System and Method Thereof	Nidhi Tandon, Tapas Kumar, <b>Mamta Arora</b>	202311008208	17.02.2023
50	The Impact of using Automation is Transforming the Supply Chain Industry	Prof. Dr. Nita H Shah, Dr. Neelam Sharma, Dr. Praveen B.M, <b>Dr. Ankita Gaur, Dr. Seema Agarwal, Dr. Ajay Singh Yadav</b>	202321026411 A	12.05.2023



## Annexure-II (b)

### Status of Sponsored Ongoing Research Projects / Submitted

#### a) Details of sanctioned and ongoing projects:

- i. **1<sup>st</sup> level screening meeting of Strengthening, Upscaling & Nurturing Innovations for Livelihood (SUNIL) programme, SEED Division, DST organized on 4<sup>th</sup> April 2023 at DST.**

Dr. Pradeep K. Varshney, Dean Research organized this meeting as PI / Convener. An amount of Rs. 43320/ received from DST for conducting the meeting and UC submitted for the same.

- ii. **3<sup>rd</sup> EC Meeting for performance evaluation of ongoing & completed projects and 2<sup>nd</sup> level screening of shortlisted project proposals under Strengthening, Upscaling & Nurturing Innovations for Livelihood (SUNIL) programme (SEED/TIASN-2/003/2015part-2) is scheduled during 5-6 June 2023.**

Dr. Pradeep K. Varshney, Dean Research being the PI / Convener of this meeting received an amount of Rs. 14.00 Lakhs from DST against sanctioned grant of Rs. 17.51 lakhs for conducting the meeting.

- iii. **Medical Insurance Claim Settlement using Blockchain Technology to Dr. Mrinal Pandey & Dr. Mamta Arora, CST Department, School of Engineering by IIT Bhilai Innovation and Technology Foundation (IBITF)**

#### Status

The project started in the month of February 2023. We received the grant from IIT Bhilai Innovation and Technology Foundation (IBITF) of Rs. 1116500/- vide UTR No.SBIN323052873321 dated **21.02.2023** towards the 1st year sanctioned amount. We have consumed Rs. 98530/- from non-Recurring funds (Rs.120000/-).

Currently the project is in progress and 8 students, CST, MRU (Final year) are working as interns in this project. Apart from this, 6 junior semester students (CST, MRU) are also contributing 2-4 hours per week in the project. We have a budget for providing stipend (7500/- pm) to two students in the project. The stipend is being provided to two students for coordinating and managing the team.

- iv. **Development and Applications of Nanoparticles incorporated bioactive surgical scaffold for bone tissue regenerative therapy to Dr. Alpa Gupta (MRDC) and Dr. Aditya Sharma (Physics) on 02.03.2023 with research grant of Rs. 12.95 Lacs**



### Status

The project started in the month of March 2022. We received the grant from HSCSIT of Rs. 1065000/- towards the 1st year sanctioned amount. However, the grant is not utilized and we have a balance of Rs. 1065000/.

- v. **Development and Testing of Ion implantation induced modified charges transport layers in lead deficient Perovskite Solar cells for enhancing the efficiency/stability and reducing the toxicity** to Dr. Aditya Sharma, Physics Department, School of Applied Sciences by Haryana State Council for Science Innovation and Technology, Panchkula

The Department of Physics, School of Applied Sciences, MRU has received a grant of 18.25 lakhs from HSCSIT, Haryana on **07.11.2022** as research project grant.

### Status

The project started in the month of November 2022. We received the grant from HSCSIT 1545000/- in university account no. HDFC-50100510695095 dated; 07-11-22 towards the 1st year sanctioned amount. From this grant 1392400/- were spent for purchasing Solar-Simulator (P.O. no- 2022-23/JAN/MRU/PO/1846, dated-31-01-2023). Other consumable items of cost Rs. 4983/- are also purchased. A total of Rs. 147617/- is balance and will be utilized to purchase other items, related to the project.

- vi. **Wastes to Resources - An awareness campaign for Waste Management granted** to Dr. Meena Kapahi, Professor Chemistry Department, and School of Applied Sciences by Ministry of Environment, Forest and Climate Change, New Delhi.

The Department of Sciences (Chemistry), School of Sciences, MRU, has received a grant of 10 lakhs for the project - The journey from the "Wastes to Resources" – An awareness campaign for Waste Management for Haryana from the Hazardous Substance Management Division, Ministry of Environment Forest and Climate Change under the scheme for Creation of management Structures for Hazardous Substances.

The project is highly flexible and involves several tools like **Public and outreach events. Trainings, workshops on subjects like bioenzyme, composting and nukkadnataks/road shows. Competitions like Best out of waste, Slogan writing and Drawing competition.** The project has been successfully completed and utilization certificate will be submitted in near future.

- vii. **Elderly Care Framework in Contemporary India: Socio-Demographic, Entrepreneurial and Policy Implications** granted to



Dr. Manmeet Bali Nag, Management & Commerce Department, SoM&C as one of the Co-Investigator in collaboration with Dr. Amit Seth, Professor FCBS, MRIIRS by **Indian Council of Social Science Research (ICSSR)**, New Delhi.

The project is in progress.

**viii. Scheme of Promoting Interests, Creativity & Ethics among Students (SPICES) by AICTE, New Delhi**

**Status**

Approval received worth Rs. 1 Lakh by AICTE under the Scheme "SPICES" for student club development, presented by Dr. Yogita Gupta and Dr. NiharikaThakur. The objective of the project is to energize and position students club/ Chapters/ Societies as facilitating entity for Evolution of Interests/Hobbies, Creativity/ Imagination/ Innovation and Ethics/ Value through a range of student activities.

The details of the activities conducted are as below:-

<b>S.No.</b>	<b>Name of the Events</b>	<b>Dates</b>	<b>Expenditure (In Rs.)</b>
1	National Youth Day	12.01.2023	-
2	Toy Tinker	23.02.2023-24.02.2023	29020.00
3	5 days training on IOT	31 Jan, 13,21 Feb, 10, 24 March 2023	80975.00

In continuation to the above, as per the discussion with H'nble VC Sir, the students are being involved in developing live projects in IIC under the SPICES scheme to promote innovation and creativity amongst students. So, for this the remaining amount is being utilized in order to purchase consumables for Projects.

**b) Research Projects submitted -06 (215.29 Lacs)**

Following 06 research proposals were submitted by Faculty members in the recent past to CSIR, ICMR, DST, and SERB-Power). The details are given below:-

- i. Diagnostic Development of Electro analytical Sensor for Testing N-Nitrosamine Impurities in Pharmaceutical Formulations (NMPA/NDIPA/NIPEA/NDBA/NMBA) & Water (NDMA/NDEA) to Council of Scientific & Industrial Research (CSIR) on 30.04.2023 (Rs. 30.00 Lacs), **Dr. Harsha Devnani (Chemistry) Dr. Roopa Rani (Chemistry)**





- ii. Ionic Conductivity Optimization of Lithium Lanthanum Zirconate by Multi-Element Doping Strategies for Thin Film Batteries to Council of Scientific & Industrial Research (CSIR) on 28.04.2023 (Rs. 49.20 Lacs), **Dr. Jitendra Pal Singh (Ramanujan Fellow), Dr. Aditya Sharma (Physics)**
- iii. Early Detection of Alzheimer's Disease Analyzing Retinal Vein Diameter and Choroid Thickness using Smartphone Camera-Captured Fundus Images and Hybrid Neural Network to Indian Council of Medical Research (ICMR) on 28.04.2023 (Rs. 70.00 Lacs), **Dr. Charu Pathak (ECE), Dr. Piyush Charan (ECE)**
- iv. Development of superabsorbent polymers using natural polysaccharides tamarind gum for sustainable plant agronomy to SERB, DST on 21.03.2023 (Rs. 1.5 Lacs), **Dr. Arpit Sand (Chemistry)**
- v. Design of Co free Ni-rich layered oxide thin film cathode of Li rechargeable battery to DST, New Delhi on 15.03.2023 (Rs. 32.59 Lacs) **Dr. Jitendra Pal Singh (Ramanujan Fellow), Dr. Aditya Sharma (Physics)**
- vi. EEG Artifact removal for the Development of BCI based Motor Rehabilitation to SERB-POWER on 20.12.2022 (Rs. 32.00 Lacs) **Dr. Charu Pathak (ECE), Dr. Piyush Charan (ECE)**



## Manav Rachna University, Faridabad.

## No. of start-ups incubated on campus

S.No.	Name of the start up	Nature of start up	Type of Innovation	Year of commencement	LLP Identification No.	Contact information of promoters	Mentors Name	Amounts Provided to Start-ups	Funding Received from	Status
1	Reitram Limbs	Nearly 190 million individuals worldwide have some form of physical disability, and we believe that if we could make a difference, why not. We are attempting to create a wearable robotic arm that is controlled by brain waves for people with special needs in order to assist them with their everyday activities and foster a sense of independence.	Product Innovation	2022	-	Drishiti Uppal-CST 2nd year AIML Lakshay/CST 1st year Hardware Shivan Minz: CST 4th year Hardware Joy Khaneja: CST 1st year AIML	Dr. Parmeeta Dhaliwal Ms. Priyanka Gupta	250000	NewGen IEDC, MRIIC	Ongoing
2	Modular Batteries	Modular Batteries are scrapped now a day if only one cell is damaged and there is no method through which a user can find which cell is not working properly. Modular batteries are used in various sectors such as household, automotive sector, etc. For this, we propose a solution that each cell in a battery pack should be used in a modular manner. A circuit was also developed through which we can monitor the health of each cell and its usage. In such a way we can minimize the wastage of the whole battery when scrapped and also end	Product Innovation	2022	-	Rudra Nand Sahu-ECE 5th Sem. (2K20ECUN03001)	Dr. Pradeep K. Varshney Dr. Yogita Gupta J.P. Sharma	250000	NewGen IEDC, MRIIC	Ongoing
3	Contract Farming	A secure mobile app for Android and iOS devices, would bridge the Gap between the land owner (contractee) and the contractor (contractor) for contract farming. The app would be in Hindi and English. Provides info about of type of soil and type of crop best to be grown. Information about State Govt.	Product Innovation	2022	-	Tejas-AIML 2nd Year student	Dr. Parmeeta Dhaliwal Ms. Priyanka Gupta	250000	NewGen IEDC, MRIIC	Ongoing
4	Dskilled	Dskilled, is a platform to provide skilled education in varied domains through their directed reality effect, which will endorse the learner with practical aspects visually at their own pace. This further ahead, plans to build a community of people aspiring to share their insights in various fields like Health and Wellness, Animal telepathy, Apparel Making, Jewellery Designing, Fashion Styling, Dance, Music, Stock &amp; Global Market. Courses and Graphic Designing. It started with a team of 20+ mentors and now growing more, who will guide them in their journey to create their hobbies	Product Innovation	2021	-	Mr. Vikas Baisoya (ECE 8th Sem.) Sarbhak Negi (ECE 8th Sem.)	Dr. Yogita Sharma	250000	NewGen IEDC, MRIIC	Ongoing
5	Vee12Auto	Vee12Auto-An automobile enthusiast and collector a student with a motto "We sell emotions not furniture's" is developing smart furniture's which gives the users a feel of comfort and access to technology on his palms. With electronically adjusted seats to Ac vented seats the startup wishes to provide maximum comforts to its customers.	Product Innovation	2021	-	Mr. Aditya Pandit (Mech 8th Sem.)		250000	NewGen IEDC, MRIIC	Ongoing
6	F.A.C.T.S-IRIS Scan	The Team is developing smart IoT camera detection devices for covid to stop/control the spread of the pandemic in crowded places. With the upcoming Third wave the team has hired interns to help speed up the process	Product Innovation	2021	-	Mr. Kashish	Dr. Yogita Gupta	250000	NewGen IEDC, MRIIC	Ongoing
7	BIG DADDY CAR WASH LLP	Auto Car washing is a startup where a team of engineers with a computer science background have joined hands to develop a smart touchless automatic car cleaning system which will focus on Eco-Wash. The Idea is to utilize as little water as possible with a comfort	Product Innovation	2021	ABB-8739	Mr. Ankit Dagar	Dr. Yogita Gupta	250000	NewGen IEDC, MRIIC	Ongoing
8	Travel Gram	Mobile application based community built for travelers and explorers to connect, share and explore co-travelers	Service Innovation	2019	-	Mr. Jayant Kumar-9643744218	Dr. Rashmi Aggarwal	250000	NewGen IEDC, MRIIC	Closed, due to student death.

9	Svachalan Technology LL	Automatic water sprinkler to make watering and maintaining plants/ gardens easier for domestic and commercial places	Product Innovation	2019	ACA-3765	Jahnvi Aggarwal-9818111359	Dr. Kamlesh Sharma	250000	NewGen IEDC, MRIIC	Ongoing
10	Metromasti (The UltiMetro Pvt. Ltd.)	The android and ios App provides a single platform for Delhi metro users with advanced features of nearby parking, Chat room, fair calculation, route information, card recharge and bill payments	Service Innovation	2019	-	Suraj Kumar-7542952461	Dr. Praneeta Dhalwal	250000	NewGen IEDC, MRIIC	Discontinued
11	ThapKrida	Working in developed games.	Service Innovation	2018	-	Mr. Sahil-8130833056 Mukul-9711166567	Mr. Sunil Kumar	250000	NewGen IEDC, MRIIC	Exit
12	Vagabond Brains	Working in digital marketing	Service Innovation	2018	-	Mr. Saurabh-9911051189	Ms Shalija Naqvi	250000	NewGen IEDC, MRIIC	Student passed out and did not continue the startup
13	Greenity	Creating a 'Smart Chair' is an innovative step towards generation of electricity from non-polluting sources rather than from conventional sources of energy	Product Innovation	2018	-	Mr. Shivam-9895986606 Shracha Bhatia-9643732462	Ms. Hanu Bhardwaj	250000	NewGen IEDC, MRIIC	Student passed out and did not continue the startup
14	Coating Vaia Solutions	Developed an extremely affordable surface protector machine for coating of floors and important equipment to protect them from dust and paints.	Product Innovation	2018	-	Mr. Aman Nishchal-8802808777	Dr. Pragati Chauhan	250000	NewGen IEDC, MRIIC	Graduated
15	Ferrox Technologies	Innovative Ideology that aims at revolutionizing commercial and agricultural EV marketplace with development in EAUV (electric agricultural utility vehicle) and battery pack development for high voltage drivetrains	Product Innovation	2018	-	Mr. Karan Segal-8800463890	Mr. Jai Prakash Sharma	250000	NewGen IEDC, MRIIC	Student passed out and did not continue the startup
16	TechnoPlanet Lab Pvt. Ltd	Working in education space to develop new age tools, technologies and programs to create engaging K-12 learning experiences with an ultimate objective to revolutionizing education.	Service Innovation	2015	Private limited firm U72300DL2015PTC285132 DIN 06753568	Mr. Mohit Bahl 8802889509 Manasvi Sihag NIKHIL-9992630025	NA	-	University funded	Graduated

**Startups Mentored/ Mentoring by Faculty Members of MRU**

S.No.	Name of the Startup	Nature of the Startup	Year	Name of Students	Name of Mentors	Grant Issued, if any	Granted by	Status
1	Aarkaya Solar Solutions	An idea to provide a modern, smart and self-sustainable way of using renewable energy	2018	Shivendra Chauhan (MRIIRS) Akshay Sharma (MRIIRS)	Dr. B.M. Bahlal	250000	NewGen IEDC, MRIIC	Exit
2	ManavNeer	To develop Nano-material based portable water treatment	2020	Dr. Sudeep Shukla, Environment Pollution Analysis Lab Parag Ahuja M.Sc. Kajal (Selected for Ph.D. Programme at MRU)	Dr. Pradeep K. Varshney	90000	NewGen IEDC, MRIIC	Ongoing
3	Innobbage	Application Based	2022	Manjot, Stephanie, Skye, Rico, Lan	Dr. Praneeta Dhalwal-YTBC Mentor	-	-	Still ongoing with the final presentation for getting funding.



**Research and Innovation Achievements of University  
Conferences/Workshop/Training Programme organized  
(December 2022 to April 2023)**

S.No.	Department Name	Type of Event	Nature of Event	Title of the Event	Level (National / International / State / University / Others)	Venue	Duration		Date(s) (dd/mm/yyyy)		Year
							No. of Day (s)	From	To		
1	CST	Workshop	Research & Innovation	Solve for Tomorrow (SFT) Season	University	A-Block Auditorium	1	12.05.2023	12.05.2023	2023	
2	Management & Commerce	Workshop	Research	One Day Workshop on SPSS and AMOS	University	IG-03	1	06.05.2023	06.05.2023	2023	
3	Management & Commerce	Conference	Research & Innovation	Business Innovation, Transformation, Sustainability: (BITS)	International	I - Block Auditorium	2	28.04.2023	29.04.2023	2023	
4	Law	Conference	Research & Innovation	Juvenile Delinquency: Psychological & Socio-Legal Perspectives	National	CADR-G Block	1	28.04.2023	28.04.2023	2023	
5	CST	Workshop	Research	How to write a Good Project Proposals	National	LF09, L Block	1	06.04.2023	06.04.2023	2023	
6	Law	Workshop	Academic & Research	AIAC Mooting Workshops: Session 3-Oral Advocacy	National	Online	1	24.02.2023	24.02.2023	2023	
7	Law	Workshop	Academic & Research	Recent Legal and Regulatory Issues in Infrastructure Laws in India	National	I-Block Auditorium	1	20.02.2023	20.02.2023	2023	
8	Library	Workshop	Academic & Research	Mindfulness: Psychological Well-Being	National	Swami Vivekananda Library and Resource Centre	1	21.01.2023	21.01.2023	2023	
9	Management & Commerce	Workshop	Research	Problem Solving & Ideation Workshop	National	I Block Auditorium	1	13.01.2023	13.01.2023	2023	
10	Physics	Seminar	Research	Bacterial resilience from single cell to colony scale using Mathematical Models	National	I - Block Auditorium	1	13.01.2023	13.01.2023	2023	
11	Physics	Conference	Research	International Conference on Futuristic Materials-2022	International	I Block Auditorium	2	08.12.2022	09.12.2022	2022	



**Annexure-II (e)****Manav Rachna University, Faridabad.****Details of Upcoming Conferences/Workshop**

<b>S.No.</b>	<b>Department</b>	<b>Title of Upcoming Conference</b>	<b>Tentative Date</b>	<b>Name of Convener</b>	<b>Name of Co-Convener</b>
1	Mathematics	International Conference of Recent Trends in Mathematics and Computations (ICRMC-2023)	9-10 November 2023	Dr. Dinesh Tripathi Dr. Advin Masih	-
2	Physics	International Conference on Energy Materials & Rechargeable Batteries	19-22 December 2023	Dr. Jitendra Pal Singh	Dr. Aditya Sharma Dr. Shiv Kumar Dixit



## Annexure-II (f)

### Activities conducted by IIC/IPR Cell/Innovation & Incubation Centre/Pre-Incubation Unit

#### 1. Institute Innovation Council (IIC) of MRU-IIC

The details of activities were taken by Institute Innovation Council are given below:-

- a) Webinar series in collaboration with Atal Incubation Centre -AIC-BIMTECH was conducted on 1st December 2022. The speaker for the session was an entrepreneur- Mr. Aditya Bose, CEO of Probano who addressed the students on the topic of '**Exposure and field visit for problem identification**'.
- b) Expert talk on '**Translation of IP for an academic institution**' was conducted on 28th December 2022. The session was taken by Ms. Reema Sahni Mediratta, In-charge & Senior Project Manager at Innovation Technology Transfer Office, accompanied by Ms. Kriti from IIT, Delhi. She is a registered Patent Agent with Indian Patent Office and has been recognized as Innovation Ambassador by MHRD, Government of India.
- c) **National Youth Day** was celebrated on 12th January, 2023 as a special day designated to commemorate the Indian thinker, philosopher, and social leader, Swami Vivekananda's 153rd birth anniversary. This day is celebrated to give a message to the youth the way of life and ideals that will make India a better country in future. IIC MRU organized Yoga session in G Block, Mandala Auditorium in which more than 150 students participated and the resource person for the session was Dr. Shobha Srivastava, Deputy Registrar Administration and Chief Warden Hostels. She gave a motivational lecture to our students; guiding them in setting and achieving their future goals with a stress free mind. Dr. Srivastava mentored the students through basic yoga exercises, sharing the benefits of Yoga for one's upliftment in career and as a human. A Youth March was also organized in the campus to sensitize the students about the philosophies, principles and ideas of Swami Vivekanada Ji.
- d) RCC Capacity Building Workshop series for "**Developing Machine Learning Expertise**" was conducted over the period from 11th January 2023 to 21st January 2023. Workshop was conducted by Mr. Harshit Dawar, Data Scientist at Foundation AI and Fortune 500 Trainer with 13 Global Certifications Holder in AIOPS domain, RHCE, AWS.
- e) IIC conducted IPR Workshop on '**Intellectual Property Rights**' in collaboration with IPR Cell on 12th January 2023. Mr. PiyushYadav, Co-Founder of IPQuad was guest Speaker for the session. He has been at the cutting edge of the confluence between the stream of analytics and IP



drafting. A registered Patent Agent since the year 6+ years, he is amongst the pioneers in India who practically harnessed the synergies between the professional streams of Engineering and law. His domain of interest lies in Robotics, AI, ML and Automation.

- f) National Startup Day was celebrated on 16th January 2023. IIC MRU participated and supported in organizing an event by Bhartiya Yuva Shakti Trust on **"Empowering Grassroot Startups for Sustainable Development"** on the occasion of National Startup Day on 16th January 2023 at Scope Convention Centre New Delhi.
- g) Workshop series on **"Upgrading Skills for Sustainable Innovation and Entrepreneurship Using IoT"** was conducted over the period from 31st January 2023 to 1st February 2023. The resource person was Mr. Shrey who is the Co-Founder of SmarDen having vast experience in IoT domain and also as an Entrepreneur.
- h) IIC Faculty Dr. Pragati Chauhan conducted **Innovation & Entrepreneurship Outreach Program** in Schools/Community on 2nd February, 2023. She conducted a Workshop on **"Encouraging entrepreneurial mindset in the youth"** in Govt. College Mohan, Faridabad and motivated the students to understand and participate in exploring the entrepreneurial world.
- i) Field visit MRU students to manufacturing unit of **Vihaan Networks Limited (VNL)**, Sector 5, IMT Manesar, Gurugram was conducted on 17th February 2023.
- j) Workshop on **'Design Thinking, Critical Thinking & Innovation Design'** was conducted from 21st February 2023 to 23rd February 2023.
- k) **Global Entrepreneurship & Startup Conclave** was organized by the Pre-Incubation Center of IIC MRU on 24th February, 2023 in association with Entrepreneurs Media. Objective was to kick start ideas, spread awareness about startups, and get funding's from the investors.
- l) IIC MRU organized **'Toy Tinker'** event in collaboration with Smartivity Labs from 23rd-24th February, 2023.
- m) IIC Faculty members of School of Management and Commerce organized BITS 2023 conference on **'Business Innovation Transformation, and Sustainability: Changing Global Paradigm'**. Conference received an overwhelming response of more than 80 research papers Nationwide and Internationally.



## 2. IPR Cell

- a) IIC conducted IPR Workshop on '**Intellectual Property Rights**' in collaboration with IPR Cell on 12th January 2023. Mr. Piyush Yadav, Co-Founder of IPQuad was guest Speaker for the session. He has been at the cutting edge of the confluence between the stream of analytics and IP drafting. A registered Patent Agent since the year 6+ years, he is amongst the pioneers in India who practically harnessed the synergies between the professional streams of Engineering and law. His domain of interest lies in Robotics, AI, ML and Automation.

## 3. Hackathons and Competitions

The details of initiatives were taken by Innovation Incubation Cell are given below:-

- a) A team of 9 students participated in ATV event which was held in the month of March 2023 at Pune, Maharashtra for 5 days (1st to 5th March 2023). The ATV vehicle is fabricated in MRU Fabrication centre.
- b) 8 teams registered for E yantra organized by IIT Bombay and one of the team (Rudranand Sahu, Prajwal Paul, Chiragsindu, Vinay Kumar) secured 1st position at National level.

## 4. Entrepreneurship, Pre Incubation and Startups Activities

The following initiatives were taken by the University in the area of Entrepreneurship, Pre-Incubation and Startups team:-

- a) Innovation and Entrepreneurship Club (I&E Club) under Pre-Incubation Unit conducted Expert Talk on "**Translation of IP for an academic institution**" on 28.12.2022. The Guest Speaker for the session is Ms. ReemaSahniMediratta, In-charge & Senior Project Manager at Innovation Technology Transfer Office, accompanied by Ms. Kriti from IIT, Delhi. She is a registered Patent Agent with Indian Patent Office and has been recognized as Innovation Ambassador by MHRD, Government of India. Recently she is recognized as 'Super Woman' by HEADSTART for her contribution in start-up ecosystem & supporting entrepreneurship through her work.
- b) Innovation and Entrepreneurship Club (I&E Club) under Pre-Incubation Unit conducted Expert Talk on "**FIKA an Entrepreneurial Style**" on 16.01.2023. The Guest Speaker for the session is Ms. Shaifali Sanghal, Founder Yung Minds. She also shared her beautiful journey that she sailed through and outshined in many hardships, from working for someone to creating jobs in





the form of a start-up. She also said that in business, one must always be on the toes and have a proactive approach.

- c) Pre-Incubation Centre in association with Entrepreneurs Media organized '**Global Startup & Entrepreneurship Conclave 2023**' on 24<sup>th</sup> February 2023 at T Block auditorium. The Chief Guest for the Conclave Prof. (Dr.) Devi Singh, Professor Devi Singh, Former Vice Chancellor, FLAME University, Pune, Director, IIM Lucknow and MDI Gurgaon graced the event.
- d) Innovation and Entrepreneurship Club (I&E Club) under Pre-Incubation Unit conducted a series of events celebrating a day named "**Entrepreneurship Zenith**" on 26 April 2022. The Global Start-up & Entrepreneurship Conclave was a congregation of entrepreneurs, investors, and innovators from around India. This event aimed to provide a platform for start-ups to showcase their ideas and products, network with like-minded individuals, and learn from industry experts. A book inauguration and a book cover inauguration was also done on Entrepreneurship Development and Dynamic Leaders authored by Dr. Yogita Sharma, Dr. Munish Jindal and Dr. Nancy Jindal by Esteemed Dignitaries.

The panel comprised of Ms. Gurrit Kaur Sethi, Founder Mindmymind and Chief Operating Officer at CARE Hospitals, Ms. Sartaj Lamba, Founder & CEO of 'Be sure' Buddy Pvt, Chairperson of AJ Group of companies and a Traffic Marshall, Ms. Suvarna Raj, International Para Athlete and Medalist and Founder of Women with Disabilities Network, and MD at Sugamya - Accessibility & Inclusion, Ms. Aarti Bindra MD at ACPL Systems, Klassify Technology, Attack Fence and a Cyber Security Specialist and Ms. Prachi Kaushik, Founder & Director of Vyomini Social Foundation (VSF) and a TEDx speaker.

This was followed by a Key note session on "Bootstrapping your Start-up towards profitability" by Mr. Shubham Maheshwari Founder, Being Chef.



MANAV RACHNA UNIVERSITY, FARIDABAD									
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING									
B-TECH ROBOTICS AND ARTIFICIAL INTELLIGENCE									
SEMESTER - 1									
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS	
ENGINEERING SCIENCE COURSES	CSH101B-T/P	PROGRAMING FOR PROBLEM SOLVING USING C	CST	3	1	2	6	5	
PROGRAM CORE COURSES	CSH107B-T/P	OVERVIEW OF DATA SCIENCE & MACHINE LEARNING	CST	3	1	2	6	5	
ENGINEERING SCIENCE COURSES	ECH103B-T/P	BASICS OF ELECTRONICS AND ELECTRICAL ENGINEERING	ECE	3	1	2	6	5	
PROGRAM CORE COURSES	MEH108B-T/P	INTRODUCTION TO ROBOTICS	ME	3	0	2	5	4	
ENGINEERING SCIENCE COURSES	MEW106B	COMPUTER AIDED DRAFTING	ME	0	0	2	2	1	
BASIC SCIENCE COURSES	PHH101B-T/P	QUANTAM MECHANICS FOR ENGINEERS	PHYSICS	3	1	2	6	5	
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				15	4	12	31	25	
SEMESTER - 2									
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS	
ENGINEERING SCIENCE COURSES	CSH103B-T/P	DATA STRUCTURES & ALGORITHMS	CST	3	1	2	6	5	
PROGRAM CORE COURSES	CSH108B-T/P	PYTHON PROGRAMMING	CST	0	0	4	4	2	
PROGRAM CORE COURSES	NEW CODE	FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE	CST	2	0	2	4	3	
PROGRAM CORE COURSES	ECH108B-T/P	DIGITAL LOGIC AND HARDWARE DESIGN	ECE	3	1	2	6	5	
PROGRAM CORE COURSES	ECW218B	SENSORS, ACTUATORS AND AUTOMATION (ARDUINO, R-PI ETC)	ECE	0	0	2	2	1	
BASIC SCIENCE COURSES	CHH144-T/P	CHEMISTRY-I	CHEM	3	0	2	5	4	
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				11	2	14	27	20	
INTERNSHIP	POST 2ND SEM SUMMER TRAINING - (2 WEEKS)								2
SEMESTER - 3									
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS	
PROGRAM CORE COURSES	CSH202B-T/P	DATABASE MANAGEMENT SYSTEM	CST	3	0	2	5	4	
PROGRAM CORE COURSES	CSH314B-T/P	MACHINE LEARNING	CST	3	0	2	5	4	
PROGRAM CORE COURSES	CSH207B-T	SOFTWARE ENGINEERING.	CST	3	1	0	4	4	
PROGRAM CORE COURSES	ECH217B-T/P	MICROPROCESSORS AND MICROCONTROLLERS	ECE	3	0	2	5	4	
PROGRAM CORE COURSES	ECH304B-T	NTRODUCTION TO SIGNALS AND SYSTEMS	ECE	3	1	0	4	4	
PROGRAM CORE COURSES	NEW CODE	KINEMATICS AND DYNAMICS OF ROBOT	ME	3	0	2	5	4	
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				18	2	8	28	24	



SEMESTER - 4								
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
PROGRAM CORE COURSES	CSH206B-T/P	OPERATING SYSTEM	CST	3	0	2	5	4
PROGRAM ELECTIVE	CSH201B-T/P	OOPS USING JAVA	CST	3	0	2	5	4
PROGRAM CORE COURSES	NEW CODE	DEEP LEARNING	CST	3	0	2	5	4
PROGRAM CORE COURSES	CSW102B/ECW107B/ME	USER INTERFACE-I (HTML5,CSS,JAVASCRIPT,JQUERY)	CSE	0	0	2	2	1
PROGRAM CORE COURSES	ECH219B-T/P	CONTROL SYSTEMS	ECE	3	0	2	5	4
PROGRAM CORE COURSES	NEW CODE	DESIGN ASPECT OF ROBOTS	ME	3	0	2	5	4
MANDATORY COURSE	CHH137	ENVIRONMENTAL SCIENCES	CHEM	2	0	0	2	0
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				17	0	12	29	21
INTERNSHIP	POST 4th SEM SUMMER TRAINING - (4 WEEKS)							3
SEMESTER - 5								
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
PROGRAM CORE COURSES	CSH204B-T&P	ANALYSIS & DESIGN OF ALGORITHMS	CST	3	0	2	5	4
PROGRAM CORE COURSES	NEW CODE	IOT FUNDAMENTALS	ECE	2	0	2	4	3
PROGRAM ELECTIVE COURSES	CSH301B-T	ROBOTIC PROCESS AUTOMATION DEVELOPMENT/DRONES AND AUTONOMOUS SYSTEM SPEECH PROCESSING & RECOGNITION/INDUSTRY 4.0/CMOS DESIGN (E)	CST/ECE/ME	3	0	2	5	4
OEC	LWS321/LWS323	CYBER LAW/ LAW RELATING TO INTELLECTUAL PROPERTY RIGHTS		2	0	0	2	2
OEC	MCS232/MCS231/PS E301-P/MCH370	INTRODUCTION TO FINANCE/ BASICS OF ECONOMICS/ DIGITAL MARKETING/E-COMMERCE/ENTREPRENEURIAL FINANCE FOR ENGINEERS		2	0	0	2	2
HSMC	EDS166	PROFESSIONAL ENGLISH	EDUCATION	2	0	2	4	3
HUMANITIES & SOCIAL SCIENCE COURSES	PSE301-P	ESSENTIAL OF PEACE & SUSTAINABILITY		2	0	0	2	2
AUDIT	CDO201	PROFESSIONAL COMPETANCY ENHANCEMENT-I		0	0	2	2	1
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				16	0	10	26	21
SEMESTER - 6								
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER	NO. OF
PROGRAM CORE COURSES	NEW CODE	REINFORCEMENT LEARNING	CST	3	0	2	5	4
PROGRAM ELECTIVE COURSES	NEW CODE	ADVANCED ROBOTIC PROCESS DEVELOPMENT /AUTOMATION/MECHATRONICS /DIGITAL SIGNAL AND IMAGE PROCESSING / NANO & NEURO-ROBOTICS	CST/ECE/ME	2	0	2	4	3
PROGRAM CORE COURSES	NEW CODE	HUMANOID ROBOTICS/KNOWLEDGE REPRESENTATION & REASONING/DIGITAL HARDWARE MODELLING USING VHDL	CST/ECE/ME	3	0	2	5	4
MC	MCS368B	ENTREPRENEURSHIP	MGMT	2	0	0	2	2
AUDIT	CDO202	PROFESSIONAL COMPETANCY ENHANCEMENT-II	CDC	0	0	2	2	1
PROGRAM CORE COURSES	ECH330B	MECHATRONICS	MECH	3	0	2	5	4
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				7	0	6	25	20
INTERNSHIP	POST 6th SEM SUMMER TRAINING - (6 WEEKS)							3



SEMESTER - 7									
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS	
PROGRAM ELECTIVE COURSES	CSH416B-T	ROBOTICS BASED INDUSTRIAL AUTOMATION	MECH	3	0	2	5	4	
HUMANITIES & SOCIAL SCIENCE COURSES	EDS288/EDS289/EDS235	ROBOTS, AI & ETHICS	MECH	3	0	0	3	3	
HUMANITIES & SOCIAL SCIENCE COURSES	MCS369B	UNIVERSAL HUMAN VALUES	EDU	3	0	0	3	3	
AUDIT	LWS323/LWS325	INDIAN CONSTITUTION	LAW	1	0	0	1	0	
PROGRAM ELECTIVE COURSES	NEW CODE	ROBOT PROGRAMMING/COGNITIVE ROBOTICS/MOBILE ROBOTICS/WIRELESS COMMUNICATION FOR RPA/NATURE BASED OPTIMIZATION TECHNIQUES	ECE/CSE	3	0	2	5	4	
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				13	0	4	17	14	
SEMESTER - 8									
NOMENCLATURE AS PER AICTE	SUBJECT CODE	SUBJECT NAME	OFFERING DEPARTMENT	L	T	P	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS	
EMPLOYMENT ENHANCEMENT COURSES	CSH413B-T&P	PROJECTS/ELECTIVES/ ENTREPRENEURSHIP/ INCUBATION/INNOVATION	CST/ECE/ME	0	0		16	8	
TOTAL (L-T-P/CONTACT HOURS/CREDITS)				0	0	0	16	8	
TOTAL CREDITS				160					

