



# Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

## IQAC Meeting for the period July 2022 – Mar 2023 held on 15 Mar 2023

### Member composition

SNo	Role	Name	Designation / Department
1	Chairperson	Swami Sarvottamananda	Vice Chancellor
2	Member Teacher	Dr. Abhijit Bandopadhyay	HoD, Physics
3	Member Teacher	Dr. Ashish Gupta	HoD, Mathematics
4.	Member Teacher	Br. Mrinmay	Coordinator, SSY
5.	Member Teacher	Sw. Japasiddhananda	HoD, Sanskrit
6.	Member Teacher	Dr. Gautam Chatterjee	Asst. Prof, Agro-biotechnology
7.	Member Teacher	Dr. Rupak Goswami	Asst. Prof, Environmental Science
8.	Member Teacher	Dr. Kunal Sikder	Med. Biotechnology
9	Administrative Member	Sw. Kaleshananda	Registrar (Acting)
10	Administrative Member	Sw. Devattwananda	Campus Logistics
11	Administrative Member	Sw. Kaleshananda	Controller of Examination
12.	Local Society	Mr.Amit Bhattacharjee	Advocate, High Court, Calcutta
13.	Student representative	Suvajit Patra	PhD Scholar, Computer Science
14.	Alumnus	Puspendu Biswas	MSc CS 2015-17
15.	Employee	Chandan Chakraborty	Accounts Dept.
16.	Industrialist	Dr. Arindam Saha	Vista Intelligence Pvt. Ltdd
17.	Coordinator	Dhyanagamyanda	HoD, Computer Science



# Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

## I. Agenda with proceedings

1. The Vivekananda Digital Archives at RKMVERI has been launched in 2022 to gather, research, and present significant incidents related to Swami Vivekananda and his associates and their role in the Nation-building.
2. Centre for AIoTMR (Artificial Intelligence of Things & Mixed Reality) is established to to adopt multidisciplinary applied research, address distinct challenges and enhance working solutions across multiple fields and departments within RKMVERI and RKMM
3. DST FIST grant has been approved to set up an AI Lab on Server this year. The total grant value is INR 1.06 crore. 25% of the cost will be borne by RKMVERI. We are awaiting the release of the funds after which the lab will be setup at the earliest possible convenience.
4. Submitting AQAR'21-22 is underway.
5. Three international online workshops were successfully held on the topics Advaitasiddhiḥ, Bhāmatī, Paribhāṣenduśekharaḥ with Bhūtivyākhyā. Several special lectures were held on Vedanta. An online certificate course in Caraka-Saṁhitā was conducted via Zoom.

## A. Department of Computer Science

### 1. Academic Activities

MSc. Admissions: There are 13 students currently pursuing BDA, and 7 students in CS all of whom were admitted in July'22. The second year batch has 24 BDA and 17 CS students.

PhD. admissions: 11 students were admitted to PhD in computer science through TCG-CREST in July'22, one student took direct admission PhD in RKMVERI in July'22, and one student in January'23.

The odd semester had a delayed start on 18 September for both MSc CS and BDA programs due to CUET based admissions. End semester exams concluded on 27 January 2023, and the even semester began on 8 February 2023.

The interim and the final course feedback were collected from all the students in google forms. The feedback report is separately attached to this document.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

### 2. Extension Activities

In the faculty meeting held in September 2022 it was proposed that the faculty members may take turns to visit the nearby colleges and lecture on topics such as how to get ready for pursuing higher education, technical advancement in Data Science, Developing motivation in theoretical research etc.

### 3. Student Activities

Students of MSc CS and BDA took initiative in arranging special classes on value education as taught in Srimad Bhagavad Gita. A total of five classes were held on Saturdays with varying student attendance.


Students of the Mathematical Sciences division on the whole wished to have a prayer hall for themselves, and arrangements were made for this in the Prajna bhavan building where Saraswati Puja used to happen.

### 4. List of Publications in 2022-23, books, articles, Posters, journal reviews undertaken

#### Journal publications

- a. Sandip Das, Sumitava Ghosh, Swathy Prabhu, and Sagnik Sen, A Homomorphic Polynomial for Oriented Graphs. Electronic Journal of Combinatorics, 25 Feb 2023
- b. Dibyayan Chakraborty, Sandip Das, Joydeep Mukherjee: On dominating set of some subclasses of string graphs. Comput. Geom. 107: 101884 (2022)

#### Conference Publications

- a. Arun Kumar Das, Sandip Das, Anil Maheshwari, Swami Sarvattomananda: Rectilinear Voronoi Games with a Simple Rectilinear Obstacle in Plane. CALDAM 2023: 89-100
- b. Sandip Das, Florent Foucaud , Sk Samim Islam, Joydeep Mukherjee: Relation Between Broadcast Domination and Multipacking Numbers on Chordal Graphs. CALDAM 2023: 297-308
- c. Dibyayan Chakraborty, Antoine Dailly, Sandip Das, Florent Foucaud, Harmender Gahlawat, Subir Kumar Ghosh: Complexity and Algorithms for ISOMETRIC PATH COVER on Chordal Graphs and Beyond. ISAAC 2022: 12:1-12:17
- d. Bahan Pal, J., & Mj, D. (2023). Improving multi-scale attention networks: Bayesian optimization for segmenting medical images. The Imaging Science Journal, 1-17.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- e. Raut, A., Tiwari, A., Das, S., Saha, S., Maitra, A., Ramnani, R., & Sengupta, S. (2023). Reinforcing personalized persuasion in task-oriented virtual sales assistant. Plos one, 18(1), e0275750.

### Book Chapter

- a. Pal, J. B. (2022, July). Holistic Network for Quantifying Uncertainties in Medical Images. In Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries: 7th International Workshop, BrainLes 2021, Held in Conjunction with MICCAI 2021, Virtual Event, September 27, 2021, Revised Selected Papers, Part II (pp. 560-569). Cham: Springer International Publishing.
- b. Dibyendu Das, Nikhilanand Arya , and Sriparna Saha. Efficient-Nets and Their Fuzzy Ensemble:An Approach for Skin CancerClassification Book Title: Neural Information Processing, Publisher: Springer Nature, 2023 (To be published)

### 5. List of Workshop, seminars, symposiums, Invited talks, colloquium

Students of the department of computer science conducted a college level two day tech-fest named Perceptron'23 on 13,14 January 2023. The techfest attracted two sponsors and a participation of 120 candidates on the whole across all events. The weblink (<http://cs.rkmvu.ac.in/perceptron2023/>) gives the details of the program.

### 6. Student exchange

Three students from RKMVERI were permitted to credit the MTech course on Quantum Computing taught at Indian Statistical Institute, Kolkata during the odd semester, and again in the ongoing even semester one student is enrolled in a course on Quantum Information taught at Indian Statistical Institute, Kolkata

### 7. Faculty Exchange

- a. Prof. Anil Maheswari, Carleton University, Canada taught a 3-credit course on Algorithms for Data Science to the 2021-23 batch MSc CS students in the odd semester.
- b. Prof. Gopal Basak, Indian Statistical Institute, Kolkata taught a 2-credit course on Introduction to Finance to the 2021-23 batch of MSc BDA students in the odd semester.
- c. Prof. Samarjit Das, Indian Statistical Institute, Kolkata taught a 2-credit course on Introduction to Econometrics to the 2021-23 batch of MSc BDA students in the odd semester.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- d. Prof. Emeritus Sukumar Ghosh, Iowa University, USA has come forward to teach a 2-credit course on Distributed Computing Systems to the MSc CS students in the even semester.
- e. Dr. Moutushi Chatterjee, Lady Brabourne College, has agreed to teach Statistics-II to the MSc BDA in the even semester
- f. Dr. Bhabatosh Chanda, IIIT Kalyani, has been appointed as a visiting professor and is now teaching Computer Vision to the BDA and CS students.

### 8. BoS meetings (dates, salient points, resolutions)

- a. Last BoS meeting was held on 6 February 2023 in online mode
- b. A 4-credit course on Natural Language Processing was introduced for the first time in MSc BDA in the even semester (july-dec'22) and the course was taught by Dr. Soumitra Samanta
- c. The total course credits for the MSc program is fixed at 80
- d. The degree project credit is set at 8 credits for both corporate based internship as well as academic internship

### 9. Research Advisory meetings, Half yearly JRF/SRF scholar presentations and dates

Half year JRF scholar presentations were held on 1 Feb 2023 for the 2021-22 batch of Phd Candidates admitted through TCG-CREST. All the candidates' presentations were found suitable for the candidates' continuation.

### 10. Research Projects

#### a. Projects applied and sanctioned

The CS department applied for DST FIST'22 grant and got sanctioned for setting up a 128 cpu core, 1.5TB RAM, 320gbGPU server powered by NVIDIA, and an IoT lab. The project cost is 1.09 cr, and the sanctioned amount is 80L which is 75% of DST's contribution.

#### b. Projects Ongoing

The Automatic Recognition and Generation of Indian Sign Language (ARGISL) project is being carried out since July'22. This research project is sponsored by VECC, Kolkata and it supports 1 JRF. In the first phase of this project the team consisting of Dhyangamyanda, Dr. Soumitra, and the PhD scholar Suvajit Patra visited Coimbatore FDMSE unit in October 2022 to initiate a collaboration in recording sign videos of 20 different signers for 2000 words.



## **Ramakrishna Mission Vivekananda Educational and Research Institute**

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

The data set creation was successfully completed on 11 January 2023. This is the first interdisciplinary work undertaken between CS and FDMSE.

**c. New Projects**

To support the building of Explanatory Sign Language Dictionary (ESLD) for FDMSE, the CS department built a python based prototype application which supports recording, and viewing of videos at varying speeds. Following the prototype the DTC unit of RKMVERI Belur built a web page hosted in Github (for the time being)

**d. Projects Completed**

None

### **11. Initiatives to improve/harmonize the student community life**

A new prayer hall is setup for the students in the science hostel upon their request. The students gather in the hall on their own every evening and observe prayer and meditation.

### **12. Student counseling/guiding for job placements, competitive exams**

The entire batch of 24 students of BDA and 2 students of CS have secured corporate internships at various locations with an average monthly stipend of 25K. The work carried out will be accounted as MSc degree projects.

As on date 18 students (out 24) from BDA and 2 (out of 17) from CS have secured job placements at various corporate institutions.

### **13. Initiatives to promote research / employability in the MSc curriculum**

In the BDA curriculum we have introduced two courses Applied Statistics, and Applied Machine Learning in the second semester which are meant to give an early introduction to research activity. We could see the result of this in the third semester during which time a joint work by two students got selected for a poster presentation held at IISc Bengaluru and bagged the second prize in the competition.

### **14. Initiatives to impart value added skills**

The following value added activities are being planned to be carried out during the ongoing even semester.

- a. Hands on introduction to Linux
- b. Technical document preparation using Latex



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

### B. Department of Physics

#### 1. Academic Activities

MSc. Admissions: There are 31 students currently pursuing an MSc, 21 of them admitted through the normal university entrance test in July 2022, and the rest, 10 of them, admitted through the CUET in September 2022. The second-year batch has 32 students, among whom one left in the middle of the third semester.

PhD. admissions: 3 students were admitted to PhD in Physics in August 2022. One of them recently left.

Post-Doctoral Fellow: Parthajit Biswas joined the department as a Post-Doctoral fellow in August 2022.

The odd semester started on August 22, 2022. As CUET admission was in September, we had arranged for extra classes for them on the weekends. End-of-semester exams started on January 9, 2023, and the even semester began on January 30, 2023.

#### 2. Student Activities

Some students from the present 2nd year batch were interested in astronomy and astrophotography. So far, dedicated hands-on classes on telescope handling, image capture, and image processing have been taught.

#### 3. Staff Activities

Two departmental staff members, Akshay Panda and Tathagata Roy, took part as volunteers in the inter-school competitions in connection with the Azadi Ka Amrit Mahotsava celebration at the Vivekananda University, Belur Math campus, on September 12, 13, and 14, 2022. They are also taking Vivek-Disha and Sanskrit Computer Applications classes, along with Design and Fabrication courses.

#### 4. List of Publications in 2022-23, books, articles, Posters, journal reviews undertaken

Journal publications

- a.  *$\mu$ SR Study of Unconventional Pairing Symmetry in the Quasi-1D  $\text{Na}_2\text{Cr}_3\text{As}_3$  Superconductor.* Amitava Bhattacharyya, Devashibhai Adroja, Yu Feng, Debarchan Das, Pabitra Kumar Biswas, Tanmoy Das and Jun Zhao *Magnetochemistry* 2023, 9(3), 70; <https://doi.org/10.3390/magnetochemistry9030070>
- b. *Multigap superconductivity in the filled-skutterudite compound  $\text{LaRu}_4\text{As}_{12}$  probed by muon spin rotation.* A. Bhattacharyya, D. T.





## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- Adroja, M. M. Koza, S. Tsutsui, T. Cichorek, and A. D. Hillier Phys. Rev. B 106, 134516 – Published 28 October 2022
- c. *Quantum critical spin-liquid-like behavior in the  $S=12$  quasikagome-lattice compound  $CeRh_{1-x}PdxSn$  investigated using muon spin relaxation and neutron scattering* Rajesh Tripathi, D. T. Adroja, C. Ritter, Shivani Sharma, Chongli Yang, A. D. Hillier, M. M. Koza, F. Demmel, A. Sundaresan, S. Langridge, Wataru Higemoto, Takashi U. Ito, A. M. Strydom, G. B. G. Stenning, A. Bhattacharyya, David Keen, H. C. Walker, R. S. Perry, Francis Pratt, Qimiao Si, and T. Takabatake Phys. Rev. B 106, 064436 – Published 30 August 2022
- d. *Thermal conductivity, thermoelectric power and Mössbauer investigations on atiferromagnetic  $CeFe_{1.7}Ir_{0.3}Al_{10}$* . VK Anand, DT Adroja, R Idczak, A Bhattacharyya, R Tripathi, VH Tran, B Lake Journal of Magnetism and Magnetic Materials
- e. *Multigap superconductivity in the new  $BiCh_2$ -based layered superconductor  $La_{0.7}Ce_{0.3}OBiSSe$* . A. Bhattacharyya, D. T. Adroja, R. Sogabe, Y. Goto, Y. Mizuguchi, A. D. Hillier Journal of Physics and Chemistry of Solids 01/07/2022
- f. *Out-of-Time-Order correlators in driven conformal field theories* Das, S., Ezhuthachan, B., Kundu, A. et al . *J. High Energ. Phys.* **2022**, 221 (2022). [https://doi.org/10.1007/JHEP08\(2022\)221](https://doi.org/10.1007/JHEP08(2022)221)
- g. *Synchronization in the Kuramoto model in presence of stochastic resetting* Mrinal Sarkar and Shamik Gupta Chaos 32, 073109 (2022); <https://doi.org/10.1063/5.0090861>

### 5. List of Workshop, seminars, symposiums, Invited talks, colloquium

#### Departmental Seminar :

Speaker Name	Date	Talk title
Vinay Malvimat	31/08/22	Fast Scrambling due to Rotating Shockwaves
Dr. Sudipto Singha Roy	04/11/2022	Emergent geometry from entanglement structure: application to static and dynamic cases





## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Satyanarayan Mukhopadhyay	09/11/2022	Particle dark matter -- thermal and non-thermal production mechanisms
Suman Das	23/11/2022	Synthetic Fuzzballs: A Linear Ramp from Black Hole Normal Modes
Dr. Ritika Dusad	28/11/2022	Magnetic Monopole Noise
Prof. Rahul Sharma	28/11/2022	Visualization of Quantum Materials
Jaydeb Chakrabarti	14/12/2022	Molecular dynamics as tool to study condensed phase properties
Ipsita Mandal	08/02/2023	Accessing the Low-Energy Physics of Critical Fermi Surfaces
Dr. Partha Pratim Pal	03/03/2023	Editorial Tips for Successful Manuscript Submissions

### 6. BoS meetings (dates, salient points, resolutions)

- Last BoS meeting was held on 28 January 2022.
- The Board approves the adjustments in the coursework of the M.Sc. (Physics) Programme for present and future batches and authorizes the Head of the Department to oversee the detailed fine-tuning of the syllabi and ensure the smooth transition into the new structure from the coming academic year or at the earliest available opportunity.
- The board approves the introduction of the proposed new course on Non Linear Dynamics and Chaos.
- The board approves the list of elective courses for the upcoming February-July 2022 Semester.

### 7. Research Advisory meetings, Half yearly JRF/SRF scholar presentations and dates

Half-year JRF and SRF scholar presentations were held on July 25, 2022, for the existing PhD students. All the candidates' presentations were found suitable for the candidates' continuation. The next presentations will be held around the last week of March 2023.

### 8. Efforts taken to promote the degree program and increase visibility

Interdisciplinary courses like non-linear dynamics (with Mathematics Department) has been introduced for final semester MSc students.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

The contents of the advanced courses are regularly monitored and modified to tune with the current research trends as much as possible.

### 9. Research Projects

National Projects:

Name of Project	Name of PI/ Co PI	Name of Funding agency	Type (Govt. / Non Govt.)	Year of Award	Funds provid ed (INR in lakhs)	Durati on of Project
Design and discovery of quantum materials with emergent properties and potential applications in energy-related technologies	Amitava Bhattacharyya (PI)	SERB	Govern ment	2023	10.56	3 Years
Understanding Honeycomb Layered Oxides' Unconventional Magnetism	Amitava Bhattacharyya (PI)	SERB	Govern ment	2022	19	3 Years
Understanding Honeycomb Layered Oxides' Unconventional Magnetism	Amitava Bhattacharyya (PI)	UGC-DA E CSR	Govern ment	2022	19	3 Years
Quantitative probing of spin-driven multiferroicity and microstructural tuning of	Amitava Bhattacharyya (Co-PI)	SERB POWER Grant	Govern ment	2022	24	3 Years



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Name of Project	Name of PI/ Co PI	Name of Funding agency	Type (Govt. / Non Govt.)	Year of Award	Funds provided (INR in lakhs)	Duration of Project
magnetolectric coupling inoxygendeficient perovskites BaRFeO <sub>4</sub> and RBaCuFeO <sub>5</sub> (R=rare-earth)						
A State-of-the-Art 4 K Closed Cycle Refrigerator for Understanding And Optimizing Novel Emergent Properties Of Quantum Materials	Amitava Bhattacharyya (PI)	Core Research Grant	Govern ment	2021	33	3 Years
Single crystal growth, understanding and optimizing strongly correlated electron based thermoelectric materials	Amitava Bhattacharyya (PI)	DST-Inspi re	Govern ment	2017	35	5 years
Dynamics and Chaos in strongly coupled QFT: Deformations and Boundaries	Bobby Ezhuthachan (PI)	Core Research Grant	Govern ment	2022	30.72	3 Years

International Projects:



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Name of Project	Name of PI/ Co PI	Name of Funding agency	Type (Govt. / Non Govt.)	Year of Award	Funds provid ed (INR in lakhs)	Duratio n of Project
Studies of quantum materials with emergent properties using neutron scattering, muon spin spectroscopy, and X-ray scattering.	Amitava Bhattacharyya (PI)	ISIS Neutron and Muon Source		2016	997	Ongoing
Studies of quantum materials with emergent properties using neutron scattering and X-ray scattering.	Amitava Bhattacharyya (PI)	Paul Scherrer Institute		2016	204	Ongoing
Studies of quantum materials with emergent properties using X-ray scattering.	Amitava Bhattacharyya (PI)	German Electron Synchrotr on DESY		2020	57	Ongoing
New BiCh <sub>2</sub> -based layered superconductor La <sub>1-x</sub> Ce <sub>x</sub> OBiSSe: A puzzling system in connection with the unconventional superconductivity	Amitava Bhattacharyya (PI)	ISIS BeamTim e			11	2 days



## **Ramakrishna Mission Vivekananda Educational and Research Institute**

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

### **10. Initiatives to improve/harmonize the student community life**

Upon the students' request, a new prayer hall was setup for them in the Pragya Bhavan on the ground floor. The students gather in the hall on their own every evening and observe prayer and meditation.

### **11. Student counseling/guiding for job placements, competitive exams**

Special sessions and Tutorials including Problem solving sessions to support the students for competitive exams like NET, GATE were organized for final year students during the last two semesters of their MSc programme.

Two discussion sessions are organized every year to provide the students an exposure to various career opportunities in academics, technical field and in other government and private sectors.

### **12. Initiatives to promote research / employability in the MSc curriculum**

- a. The previous one semester long MSc Physics project has been replaced by a two-semester long project to bring more academic independence to the students.
- b. The positional astronomy centre with three telescopes have been made operational and interested students are made involved therein to make them equipped with telescope set up, sky observation and techniques of astrophotography and image processing.
- c. A new, partly laboratory based special paper on “Advanced Quantum Materials” has been introduced in the final semester of the MSc programme.
- d. A research Group in condensed matter physics has been recently started with two newly joined faculty members in the department, who work in this field.

### **13. Initiatives to impart value added skills**

The following value added activities are being planned to be carried out during the ongoing even semester.

- a. Hands on introduction to Linux
- b. Project writing using Latex
- c. Physics theoretical model analysis using fortran programming language
- d. Electronics: Semiconductor devices, Opto-electronic devices, Digital techniques and applications, Microprocessor and microcontroller basics.
- e. Programming the (Arduino) microprocessor hardware and analyze data



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- f. Interfacing the microprocessor with a computer
- g. Interfacing the microprocessor hardware with sensors
- h. Interfacing of control devices using the microprocessor hardware
- i. Design and fabrication of complete projects out of these microprocessor controlled hardware, preferably with some real life application.
- j. Some areas on which the projects may be designed involve : Robotics, Thermistor, Agriculture & Irrigation, Scientific measuring instruments, Medical devices, Sports, etc.

### 14. Best practice in the department

With the aim of making technology easily accessible to common people, creating an interdisciplinary/ multidisciplinary platform for implementation of various ideas, the Department offers a Laboratory programme to the MSc students, under the course name “Design and Fabrication Laboratory.” This practice helps in training and empowering the students in designing, assembling, fabricating and computing digital and microprocessor controlled systems, using a hands-on approach. Every year students design cost effective real life devices/gadgets which can benefit human beings and society as a whole

### 15. Resolutions for future implementation

- a. To introduce the subject of ‘machine learning’ in the MSc course curriculum and also to organize special lectures on various topics of this area which are linked to modern methodology of research in Physics.

## C. Department of Sanskrit

### 1. Academic Activities

- a. Admissions: MAIS (MA Integrated in Sanskrit)
  - i. Applications received – 28
  - ii. Admitted - 17
- b. No. of students in MAIS programme - 80
  - i. BA (Hons.)
    - 1yr – 16 students (Batch 2022-27)
    - 2yr – 17 students (Batch 2021-26)
    - 3yr – 15 students (Batch 2020-25)
  - ii. MA
    - 4yr – 13 students (Batch 2019-24)



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- 5yr – 12 students (Batch 2018-23)
- 5yr WW – 7 students (Batch 2018-23)
- c. Examination – The Department of Sanskrit and Philosophy follows Continuous Comprehensive Evaluation system. The details are shown below:
  - i. Odd Semester: Jul-Dec 2022
    - Unit Test-1 - 16 to 24 August
    - Mid Semester exam– 12 to 21 September
    - Unit Test-2 – 7 to 12 November
    - End Semester exam- 12 to 24 December
  - ii. Even Semester: Jan-Jun 2023
    - Unit Test-1 – 6 to 14 February
    - Mid Semester exam – 15 to 31 March
- d. Admissions: PHDS (PhD in Sanskrit)
  - i. Applications received – 17
    - Admitted – 7
  - ii. No. of students in PhD Programme
    - Mphil – 15
    - PhD - 24

### 2. Extension Activities

- a. Extension lectures: Nyāya and Buddhist Epistemology – by Dr. Ruma Bandyopadhyay Secretary, Sanskrit Sahitya Parishad, Kolkata and Retired Associate Professor, Basanti Devi College, Kolkata, West Bengal (9 February to 23 March 2023, on Thursdays / 10 hours lecture)
- b. Extension lectures: Research Methodology – by Prof. Arun Ranjan Mishra Professor, Visva-Bharati University, Santiniketan, Birbhum (14 Dec 2022 to 2 Feb 2023 / 8 hours lecture)
- c. Extension lectures: Research Methodology – by Prof. Jagat Ram Bhattacharyya, Professor, Visva-Bharati University, Santiniketan, Birbhum (20 Dec and 23 Dec 2022 / 4 hours lecture)
- d. Extension lectures: Vivaraṇaprameyasa ṅ mṅrahaḥ - by Dr.Pushkar Deopujari, Assistant Professor in Vedanta, Calicut Adarsha Sanskrit Vidyapeetha, Balussery, Kozhikode, Kerala (11 to 22 Oct 2022 / 10 hours lecture )

### 3. Student Activities

- a. Vivekabhāskaraḥ (Saṃskṛtavibhāgīyabhittipatrikā)

Vivekabhāskara, the wall magazine of the Department started its journey on the birth anniversary (Jan 12th) of Swami Vivekananda in 2015. This magazine provides opportunity to the students to discover, develop, and





## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

showcase their creative writing skills. Students find in it, an opportunity to publish stories, poems, slokas, novels, etc. It also helps the students to increase their knowledge in Sanskrit language. The magazine is edited thoroughly before publication. The editing work is done by students under the guidance of the faculty members. Original and innovative writing are given preference over others while selecting the articles. Revered monks, respected professors of the Institute, distinguished guests inaugurate the magazine.

### b. Mānasollāsinīpariṣadṣ

An Educational Institute is best known by the amount of efforts it puts in, and expansion it makes beyond the academic syllabus. Mānasollāsinī-pariṣadṣ is a forum created by the Department with a view to help students discover and develop talents dormant in them. Guided and supervised by the faculty members, the platform nurtures creative and performance skills in students among others. The Mānasollāsinī-pariṣadṣ consists of sañcālaka, gaṇaṇ , gaṇaṇ nāyaka, pariṣadṣ t-sadasya all constituted of students. Every gaṇaṇ has a gaṇaṇ nāyaka - team leader - who plans, organises, and executes the details under the guidance of the faculty members. The forum meets every Saturday for a programme of one hour, from 1.30 to 2.30 pm. Group events, essay and story writing, lectures, debates, impromptu speech, and śloka recitation among others are conducted regularly. Excellence, and eminence is rewarded appropriately by prizes, etc.

## 4. List of Publications in 2022-23, books, articles, posters, journal reviews undertaken

### a. Books -

- i. Mahānārāyaṇopani ṣat ṣ (original text with simple meaning in Bengali) – Translated and Edited by Dr. Rakesh Das, Assistant Professor, Department of Sanskrit and Philosophy, RKMVERI - published in August, 2022
- ii. Strotramālā 2nd edition (Bengali) – published on 26 July 2022
- iii. Alaṅkāraśāśropakaṅṭham (Sanskrit) – Author – Dr. Venkataramana Bhat, Assistant Professor, Department of Sanskrit and Philosophy, RKMVERI – Published on 15 December 2022

### b. Journals -



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- i. Prajñālokaḥ (7,8,9,10 Issues) – published in February ḥ , 2022
- ii. Dīpaśikhā: A Half-yearly e-Magazine (Volume 2 Issue 2) – published in January 2023

### 5. List of workshop, seminars, symposiums, invited talks, colloquium

#### a. Workshop -

- i. Online International Workshop in Paribhāṣenduśekhara ṣ ḥ of Nāgeśabhaṭṭa ṭ with Bhūtivyākhyā – by Dr. Brajbhushan Ojha, Associate Professor, Department of Vyakarana, Faculty of Sanskrit Vidya Dharmavijnan, Banaras Hindu University, Varanasi (5 January to 6 February 2023/ 19 hours lectures/ weekly self-assessments forms, etc are the highlights) – no. of registered participants – 56 (Link-<https://youtube.com/playlist?list=PL-3IQqoCBO3Nyz2LpxNNnNK4LUHWHyOy3> )
- ii. Online Workshop in Brahmasūtra-bhāṣyaṣ -bhāmatī from the beginning to Jijñāsādhikaraṇam ḥ – by Dr.Ganesh Ishwar Bhat, Associate professor and Head, Department of Advaita Vedanta, Sringeri Campus, Central Sanskrit University (3 January to the middle of March 2023/ 39 hours lectures / weekly self-assessments forms, etc are the highlights) – no. Of registered participants – 49 (Link-[https://www.youtube.com/playlist?list=PL-3IQqoCBO3Mxnpd\\_VIUkoztrXbQ\\_dpdQ](https://www.youtube.com/playlist?list=PL-3IQqoCBO3Mxnpd_VIUkoztrXbQ_dpdQ) )
- iii. Online International Workshop in Advaitasiddhiḥ of Madhusūdana-sarasvatī – by Dr. K.S.Maheswaran, Assistant Professor, The Madras Sanskrit College, Chennai (5 July to 13 August 2022/ 35 hours lectures/weekly self-assessments forms, etc are the highlights) – no. of registered participants – 68 (Link-<https://www.youtube.com/playlist?list=PL-3IQqoCBO3MmLtwCEpESbHszsHw9OJK> )

#### b. Special Lectures -

- i. Special Lectures: Paripraśnaḥ – by Prof. K.E.Devanathan, former Vice-Chancellor of Sri Venkateswara Vedic University, Tirupati and Karnataka Samskrit University, Bengaluru (19 Dec 2022) (Link - )



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- ii. Special Lectures: Global Opportunities for Sanskrit Students – by Sri Nitish Rai Parwani, M.Sc, University of Oxford, UK (27 Nov 2022) (Link - <https://youtu.be/TEfyvCVBu64> )
- iii. Special Lectures: Dimensions of Soft Skills in Higher Education – by Kumara Swamy M.S, Bengaluru (17 Sept 2022) (Link - <https://youtu.be/MpjtLNd6te0> )

c. Special talk -

- i. Special talk on Vedanta – by Mahamandaleshwar Acharya Swami Pranav Chaitanya Puri Maharaj of the Paramarth Sadhak Sangh (9 March 2023)

### 6. BoS meetings (dates, salient points, resolutions)

Date - Saturday, 31 December 2022

### 7. Efforts taken to promote the degree programme and increase visibility

- a. Admission notice for BA (Hons) in Sanskrit 2023
  - i. uploaded on website – 12 November 2022
  - ii. Printed version dispatched to schools, and other institutions in West Bengal – 1800 pcs

### 8. Research Projects

- a. Projects applied and sanctioned
  - i. IKS Project - Indian Knowledge System Samvardhini Project – in Kautilya's Arthashastra

### 9. Initiatives to improve/harmonize the student community life

Morning and Evening prayer at Student Hostel, Ramakrishnananda Bhavan

### 10. Student counseling/guiding for job placements, competitive exams

- a. Student Counselling
  - i. Group Counselling (in the Jul-Dec semester) – 15 November 2022
  - ii. Group Counselling (in the Jan-Jun semester) – 20 January 2023
- b. NET Coaching

Sl.	Date	No. of Beneficiaries	Teacher
1	21 Dec 2022	32 (MA 1yr and 2yr)	Madhurima Chattopadhyay
2	11 Jan 2023	32 (MA 1yr and 2yr)	Madhurima Chattopadhyay



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Sl.	Date	No. of Beneficiaries	Teacher
3	23 Feb 2023	32 (MA 1yr and 2yr)	Arnab Biswas

### 11. Mentor-mentee meetings

a. Women's Wing:

5th year students (7) – Dr.Venkataramana Bhat

b. Men's Wing:

- i. 1st year students (16) – Swami Japasiddhananda
- ii. 2nd year students (17) – Dr.Rakesh Das
- iii. 3rd year students (15) – Dr.Neeraj Kumar Bhargave
- iv. 4th & 5th year Vyakarana students (7+7) - Dr.Gopikrishnan Reghu
- v. 4th & 5th year Vedanta students (6+5) – Dr.Nagaraja Bhat
- vi. M.Phil & Ph.D scholars – Their respective research guides

### 12. Initiatives to impart value added skills

a. Indian Spiritual Heritage class

Frequency of Study Circle	Mode of Study Circle	Duration of the study cycle	Average number of participants	Number of Study Circle held in this period
Weekly 2 classes	Offline	1 hour each day	80	210

Details of the Indian Spiritual Heritage classes for reference

Topic	Year of study	Total Contact Hour	No. of beneficiaries	Teacher
Life of Swami Vivekananda	1st yr	14	16 (boys)	Br. Atreya
Life of Bhagavan Sri Ramakrishna	2nd yr	36	17 (boys)	Swami Kirtipradananda + Paromita Roy
Life of Holy Mother Sri Sarada Devi	3rd yr	31	15 (boys)	Abhijit Bandopadhyay



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Jnana Yoga of Swami Vivekananda	4th yr	51	13 (boys)	Br. Somnath
Practical Vedanta, Universal Religion lectures of Swami Vivekananda	5th yr	36	12 (boys)	Br. Somnath + Swami Kirtipradananda + Paromita Roy
Practical Vedanta, Universal Religion lectures of Swami Vivekananda	5th yr WW	42	7 (girls)	Paromita Roy
Total		210	80	

b. Communicative Sanskrit for 1<sup>st</sup> year students

### 13. Faculty development programs held / attended

- a. Dr.Rakesh Das, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme – Academic Administration – 7 Nov to 13 Nov 2023
- b. Dr.Gopikrishnan Reghu, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme – Managing Online Classes & Co-creating MOOCS 16.0 – 13 July to 27 July 2023
- c. Dr.Nagaraja Bhat, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme – Managing Online Classes & Co-creating MOOCS 16.0 – 13 July to 27 July 2023
- d. Dr.Neeraj Kumar Bhargave, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme – Managing



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Online Classes & Co-creating MOOCS 16.0 – 13 July to 27 July 2023

- e. Dr.Shantanu Ayachit, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme – Managing Online Classes & Co-creating MOOCS 23.0 – 7 February to 21 February 2023
- f. Dr.Sukdev Bhatt, Asst. Professor, Department of Sanskrit and Philosophy, RKMVERI, Belur Math - Teaching Learning Centre, Ramanujan College, University of Delhi – Programme (onging) – 22 Feb – 21 March 2023 – Faculty Induction/ Orientation programme

### 14. Best practice in the department

- a. Thoroughly supervised and guided study hour for students, where students themselves of monitor their attendance etc. (7 am to 9 am, and 7 pm to 9 pm)
- b. Regular tests and exams for self-assessment (conducted daily from 9.30 pm to 10.15 pm)
- c. Conversational Sanskrit: practised and monitored by students themselves under the guidance of the faculty members.

### 15. Resolutions for future implementation

Online MA Programme (still under preparation of the quadrants as stipulated by the UGC)

## D. Department of Mathematics

### 1. Academic Activities

- a. MSc. Admissions: There are currently 22 students in the second semester pursuing MSc of whom 19 were admitted in August 22 and 3 were admitted in September 2022 through CUET 2022 .
- b. The second year batch has 27 MSc students in their fourth semester.
- c. PhD. admissions: 7 students were called for test but finally none were admitted to PhD in Mathematics.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- d. Sem 1 end-semester exams concluded on 2nd February 2023, and the even semester began on 13th February 2023.
- e. The second semester commenced on Feb 13th.
- f. For the 2nd Year batch, end semester exams concluded on 23rd December 2022, and the even semester commenced on 9th January 2023.

### 2. Extension Activities

- a. Prof. Stephan Baier was guiding a student, Palash Khanra, from Vidyamandira. The project was on the congruent number problem and its relation to elliptic curves.

### 3. Student Activities

- a. Students of the Mathematical Sciences division on the whole wished to have a prayer hall for themselves, and arrangements were made for this in the Prajna bhavan building where Saraswati Puja used to happen.
- b. There was a student seminar talk titled “A homological approach to the Jordan-Brouwer separation theorem” by **Sohini Mukherjee**, second year MSc student at the Department of Mathematics, on 18th November 2022.

### 4. Publications

Stephan Baier:

- a. “A Bombieri-Vinogradov-type theorem with prime power moduli”, joint paper with Sudhir Pujahari, *Acta Arithmetica* **204** (2022) 115--140.
- b. “Diophantine approximation with prime restriction in function fields”, joint paper Esrafil Ali Molla, with an appendix by Arijit Ganguly, *Journal of Number Theory* **241** (2022) 57--90.
- c. “Asymptotic behavior of small solutions of quadratic congruences in three variables modulo prime powers”, joint paper with Anup Haldar, *Research in Number Theory* **8** (2022) Paper No. 58, 24 p.

Amit Samanta :

- a. (Jointly with Santanu Sarkar) “Boundedness of composition operator on several variable Paley-Wiener space”, *Linear algebra and its applications* **660** (2023) 66-79.

Shameek Paul:

- a. “Extremal sequences for a weighted zero-sum constant”, joint paper with Santanu Mondal and Krishnendu Paul, *Integers* **22** (2022) #A93, 16 p.
- b. “On a different weighted zero-sum constant”, joint paper with Santanu Mondal and Krishnendu Paul, *Discrete Math.* **346** no. 6 (2023) 113350, 8 p.





## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Ashish Gupta:

- a. Gelfand-Kirillov dimensions of simple modules over twisted group algebras with Umamaheshwaran Arunachalam, *Izvestiya Mathematics*, 2022, Vol 86 (3)

Sukumar Das Adhikari:

- a. (Joint with Shruti Hegde, Md Ibrahim Molla and Subha Sarkar) Inverse problems related to some weighted zero-sum constants for cyclic groups, *Integers* 22 (2022), Paper No. A7, 9 pp.
- b. (Joint with Shruti Hegde) On some weighted zero-sum constants, *J. Ramanujan Math. Soc.* 37 (2022), no. 3, 281–286.

Nilanjan Bag :

- a. (Joint paper with Antonio Rojas-León, Zhang Wenpeng) 'On some conjectures on generalized quadratic Gauss sums and related problems', *Finite fields and their applications*, 86 (2023).

Independent papers by PhD students:

Ashish Gupta's Students

- a. Simple Modules over  $\mathbb{K}_q[X, Y] \rtimes U_q^{\geq 0}(\mathbb{Z}_2)$  and  $\mathbb{K}_q[X, Y] \rtimes U_q(\mathbb{Z}_2)$  at root of unity, Author: **Snehashis Mukherjee and Sanu Bera**, Journal: [Communications in Algebra](#) (accepted on 11/11/2022)

Prof Adhikari's students

- a. **Md Ibrahim Molla** has published a paper titled - "Some inverse problems in zero-sum theory", published online in *Proc. Indian Acad. Sci. Math. Sci.* (2022).

### 5. List of Workshop, seminars, symposiums, Invited talks, colloquium:

Stephan Baier: Invited talks at the following conferences (from July 2022).

- a. "Analytic Number Theory" at ISI Kolkata, 04.07.-05.07.2022
- b. "National Mathematics Day" at IIT Jodhpur, 22.12.2023
- c. "Analytic Number Theory" at ISI Kolkata, 06.02.-10.02.2023
- d. "Workshop on Number Theory" at NISER Bhubaneswar, 20.02.-25.02.2023
- e. "International Conference on Number Theory" at IIT Kanpur, 27.02.-01.03.2023

Shameek Paul: Participated in the workshop "Combinatorial Methods in Graph Theory" at Amrita Vishwa Vidyapeetham, Coimbatore, 14.07.22 to 16.7.22



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Sukumar Das Adhikari :

- (June 29 - 7th July 2022) - Lectured in the summer programme in Mathematics, SPIM at HRI, Allahabad.
- (27-30 November, 2022) - Lectured in an Instructional School for Teachers (IST) on Polynomials, at Manipur University, Imphal.
- (27 - 30 December 2022) - Gave two presidential talks (general, technical) at the 88th Annual Conference of IMS held at BIt Mesra.
- (16 -20 January 2023) - gave lectures in a winter school in Mathematics held at ISI North-East Centre for the M.Sc students studying in that region.
- (17th January 2023) - Gave a talk in the department of mathematics of Tezpur University.
- (20-24 February 2023) - Gave a talk in a Workshop on Number Theory held at the School of Mathematical Sciences, NISER Bhubaneswar.

Nilanjan Bag :

- Gave an online Colloquium talk titled "Some problems on exponential sums" at IIT Madras in November 2022.
- Gave a Colloquium talk titled "Bounds of bilinear sums of Kloosterman sums" at HRI, Allahabad in July 2022.

Talks by PhD student Esrafil Ali Molla:

- Talk titled "Diophantine approximation with prime restriction in function fields" at the 88th Annual Conference of the Indian Mathematical Society, 27-30 December 2022, BIT Mesra, India.
- Talk titled "Diophantine approximation with prime restriction in quadratic function fields" at the Workshop on Number Theory, 20-25 February 2023, NISER Bhubaneswar, India.

### 6. Seminars and Colloquiums organized by the department

Sl. No	Title	Seminar/Colloquium	Speaker	Date
1	An introduction to Pingalacarya's Chandahsutra	Special Colloquium	Prof. Ramasubramanian, IIT Mumbai	2022-09-28 - 2022-08-29



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

2	Poissonian pair correlation	Colloquium	Prof. Anirban Mukhopadhyay, IMSC Chennai	2022-08-22
3	A Result on Zeros of Holomorphic Functions	Colloquium	Prof. S.M. Srivastava, Indian Association of Cultivation of Science, Kolkata	2022-09-28
4	Trace of powers of algebraic numbers	Colloquium	Prof. Thangadurai, HRI Prayagraj	2022-10-17
5	Efficient congruencing	Seminar Series	Nilanjan Bag (Research Associate)	

### 7. Student exchange

A student of sem 4 is currently pursuing a project under the guidance of Professor Debashish Goswami of ISI, Kolkata on Riemannian Geometry.

### 8. Research Projects

Sagnik Chakraborty:

- Currently working on a project titled - "Algebraic analogue of a result of Mumford" , supported by the SERB - MATRICS grant. The work started in 2022 and the duration of the project is 3 years.

Debaldev Jana :

- Currently working on a project titled - "Explosive predator and mutualistic preys: A comparative study of Pattern formation and the Turing-Hopf bifurcation before, on and after blow-up" , supported by the SERB - MATRICS grant. The work started in 2020 and the duration of the project is 3 years.
- Also working on a project titled - "Comparative study of the spatio-temporal variability on the dynamics of explosive food chain models: Mutualistic preys with restricted growth rates and sexually reproductive generalist predator interaction as case study" , supported by the Core Research Grant of SERB. The work started in 2021, and the duration of the project is 3 years.



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Ashish Gupta:

Currently working on the NBHM project titled “Gelfand–Kirillov dimension of simple modules over skew polynomial rings”.

### 9. Student counseling/guiding for job placements, competitive exams

We suggest students to appear for various competitive exams for fellowship also provide guidance for applying for various competitive exams. We are also writing proper records for students applying to universities abroad.

### 10. Initiatives to promote research / employability in the MSc curriculum

The students are encouraged to present seminars on suitable topics. These seminars are often based on some particularly nice results in research papers.

### 11. Initiatives to impart value added skills

- Math students are encouraged to give student seminars in the dept – this promotes their presentation and effective communication skills.
- Moreover their sem 4 project requires them to write a professional report preferably typed in latex.

### 12. Resolutions for future implementation

In order to fulfil the UGC requirement of 80 credits per academic year for the masters program we are considering the possibility of transforming the 4-credit courses to 5-credit courses.

## E. Sports Science and Yoga

### 1. Academic Activities

#### a. Admission to M.Sc Yoga 2022 session

Applicant Name	Category	Previous Degree	Previous Institution
Kamalesh Biswas	SC	BSc Yoga	Visva Bharati University
Bikash Dey	OBC	BSc Yoga	Visva Bharati University
Rajdip Santra	GENERAL	BSc Yoga	Visva Bharati University
Debraj Das	SC	BSc Yoga	Visva Bharati University
Pratik Nath	GENERAL	BTech, PGDY	RKMVERI
Soutik Ghosh	GENERAL	BSc Yoga	Visva Bharati University



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Applicant Name	Category	Previous Degree	Previous Institution
Debraj Karak	GENERAL	BSc Yoga	Sri Sri University Cuttack

All 7 students took admission and classes started on Monday 22 August 2022.  
Kamalesh Biswas withdrew admission on 31 August 2022 and Soutik Ghosh on 14.1.2023

### b. Admission to M.Sc Sports Science 2022-24 session

Applicant Name	Category	Previous Degree	Previous Institution
Sudesh Kumar K	SC	BSc.Physical Education	GAPEY Coimbatore
C Hari Vishnu	DNC	BSc.Physical Education	GAPEY Coimbatore
Gg Chandru	OBC	BSc.Physical Education	GAPEY Coimbatore
Chayan Kundu	Geneeral	BSc.Physiology	University of Calcutta
Injamul Haque	Geneeral	BSc.Physiology	University of Calcutta
Mokaddam Hossain	OBCA	BSc.Physiology	University of Calcutta
Subhradeep Roy	Geneeral	BSc.Microbiology	University of Calcutta
Tiyash Biswas	SC	BSc.Chemistry	WB State University

Subhradeep withdrew admission on 7 Oct 2022

### c. Admission to PhD Sports Science 2022-24 session

Applicant Name	Category	Previous highest Degree	Fellowship
Debabrata Chatterjee	Gen	MSc Sports Sc in 2021 from RKMVERI	UGC NET JRF
Debjit Das	Gen	MSc Sports Physiology in 2020 from University of Calcutta	SVMCM

### d. Admission to PhD Yoga 2022-24 session

Applicant Name	Category	Previous highest Degree	Fellowship
Sanjoy Majhi	OBC	MA Yoga in 2021 from	UGC NET JRF



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

		RKMVERI	
--	--	---------	--

### 2. Extension Activities

#### a. Assessment of athletes

The Department has started assessment of athletes as extension activity. The following was accomplished

Date	Activity
2,3 April 2022	Onsite assessment and counseling of 89 athletes at Bengal Table Tennis Academy, Yuva Bharati Stadium , Salt Lake, Kolkata
3 April 2022	Onsite assessment and counseling of 20 footballers at Bengal Football team at Yuva Bharati Stadium, Salt Lake, Kolkata
11 May 2022	Assessment and counseling of 4 athletes of State Sports Academy, Miao, Arunachal Pradesh at SSY Lab
10 December 2022	Physical Fitness Test Camp of U-19 Footballers of Chandannagore Sporting Association (CSA) - 7 students of MSc Sports Sc and two students PhD Sports Sc conducted the camp under guidance of Dr Arnab Das

#### b. Yoga camp

During 3-5 February 2023, a three day Yoga camp was held at IIM Ranchi. A total of 15 resource persons, including 3 monastics, 2 faculty members and 10 students went to IIM to conduct the camp. On an average 100 students attended each session. The participants were mostly MBA students and some staff and faculty members also attended.

### 3. Student Activities

Period	Activity
5 June 2022- 30 September 2022	3 months internship for MSc Sports Sc 2021-23 batch at SAI kolkata (3 students attended)
27 June - 2 July, 2022	7 days training for MSc Sports Sc 2021-23 batch at JSSPS Ranchi (3 students )



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

### 4. List of Publications in 2022-23, books, articles, Posters, journal reviews undertaken

#### Journal publications

##### 2023

- a. Saunders, J.; **Sikder, K.**; Phillips, E.; Ishwar, A.; Mothy, D.; Margulies, K.B.; Choi, J.C. Med25 Limits Master Regulators That Govern Adipogenesis. *International Journal of Molecular Sciences*. 2023, 24, 6155. <https://doi.org/10.3390/ijms24076155>
- b. **Arnab Das\***, S Azarudheen, Bhaskaran Chandrasekaran, Shifra Fernandes\*, Fiddy Davis. The plausible effects of wearing face masks on sports performance – A scoping review. *Science et Sports*. 2023 (in press).
- c. J. M. Maurer, K. A. Harenski, **Subhadip Paul**, et al. Machine learning classification of chronic traumatic brain injury using diffusion tensor imaging and NODDI: A replication and extension study. *Neuroimage: Reports*. 2023, 3, 100157, <https://doi.org/10.1016/j.ynirp.2023.10015>
- d. **Gopinath Bhowmik Bhunia**, Uday Sankar Ray. Training and detraining management of performance measures by Yoga among middle-aged blue-collar men. *International Journal of Ayurvedic Medicine*. 2023; 13(4): 984–990. <https://doi.org/10.47552/ijam.v13i4.3065>

##### 2022

- a. **Tanugatri Majumder**, Virginia De Martin Topranin, Øyvind Sandbakk, and Dionne A. Noordhof. Indian Endurance Athletes' Menstrual Cycle: Practices, Knowledge, Communication, Health, and Changes in Perceptions Across the Phases. *International Journal of Sports Physiology and Performance*. 2022; 17(12): 1706-1715. [doi: 10.1123/ijsp.2022-0131](https://doi.org/10.1123/ijsp.2022-0131). (<https://pubmed.ncbi.nlm.nih.gov/36351428/>)
- b. Subhashis Biswas, Supratim Guha, **Rupayan Bhattacharya**. Validity And Reliability Of Polar V800 Smart Watch To Measure Cricket-Specific Movements. *Physical Education Theory and Methodology*. 2022; 22(3), 316-322. <https://doi.org/10.17309/tmfv.2022.3.03>.
- c. Subhashis Biswas, **Rupayan Bhattacharya**. Effect of physical and physiological parameters on the performance of sub-elite Indian upper order batsmen in T20 matches: a pilot study. *MOJ Sports Med*. 2022; 5(2): 51–55. [doi: 10.15406/mojm.2022.05.00118](https://doi.org/10.15406/mojm.2022.05.00118)
- d. J. Michael Maurer, **Subhadip Paul**, Bethany G. Edwards, Nathaniel E. Anderson, Prashanth K. Nyalakanti, Carla L. Harenski, Jean Decety, Kent A.





## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

- Kiehl. Reduced structural integrity of the uncinate fasciculus in incarcerated women scoring high on psychopathy. *Brain Imaging and Behavior*. 2022; 1-9. <https://doi.org/10.1007/s11682-022-00684-z>
- e. Vikas Pareek, **Subhadip Paul**, Prasun K. Roy. Corpus Callosum Remodeling in Glioma: Constancy of Fiber Density and Anisotropy in MRI. *Canadian Journal of Neurological Sciences*. 2022; 49(2):282-286. (<https://doi.org/10.1017/cjn.2021.64>)
- f. **Manohar Kumar Pahan**, Mahendra Kumar Singh. Effect of Day Time on Cognitive Performances of Preadolescent Athletes Nurtured in a Controlled Environment. *Physical Education Theory and Methodology*. 2022 Jun 25; 22(2): 268-275.
- g. **Manohar Kumar Pahan**, Mahendra Kumar Singh. Reactive Stress Tolerance in Preadolescent Sports Participants: A Comparison of Six Individual Non-Contact Sports. *Teoriâ Ta Metodika Fizičnogo Vihovannâ*. 2022; 22(1): 121-127.
- h. **Arnab Das**, Usha S. Kaniganti, Shruti J. Shenoy, Pralay Majumdar, Alak K. Syamal. Monitoring training load, muscle damage, and body composition changes of elite Indian rowers during a periodized training program. *Journal of Science in Sport and Exercise*. 2022; 1-12. [doi: 10.1007/s42978-022-00197-7](https://doi.org/10.1007/s42978-022-00197-7).
- i. Gargi Ray Chaudhuri, **Arnab Das**, Swaraj Bandhu Kesh, Koushik Bhattacharya, Sulagna Dutta, Pallav Sengupta, Alak Kumar Syamal. Obesity and male infertility: multifaceted reproductive disruption. *Middle East Fertility Society Journal*. 2022; 27(1): 1-2.
- j. Debdatta Talukdar, Akash Kumar Halder, Rinini Dastidar, Soumitra Kumar, Manojit Lodha, Ajanta Banerjee, Swapan Karmakar, **Kunal Sikder**. Inflammation-related Biomarkers Are Associated With Severity Of Idiopathic Dilated Cardiomyopathy (IDCM): A Brief Report On Patients Of West Bengal, India. *Journal of Cardiovascular Disease Research*. 2022. 3(1).
- k. Asmita Chakraborty, Sheta Halder, Purvi Kishore, Disha Saha, Sujata Saha, **Kunal Sikder**, Arnab Basu. The structure-function analysis of Obg-like GTPase proteins along the evolutionary tree from bacteria to humans. *Genes to cells*. 2022 Jul;27(7):469-481.

### Conference Publications

#### 2022:

- a. **Arnab Das**. Sports genes and their influence on human elite athletic performance - current state and future direction. 68th Annual National Conference of Association of Physiologists & Pharmacologists of India



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

(APPICON 2022) at PGIMER, Chandigarh. 13th-15th December, 2022.

- b. **Arnab Das**, S Azarudheen, Baskaran Chandrasekaran, Shifra Fernandes, Fiddy Davis. New Normal in the COVID-19 Era: The Plausible Effects of Wearing Face Masks While Exercising and Training. 31st Annual Conference of The Physiological Society of India (PHYSICON-2019) An Extension Programme at Bankura Christian College, Bankura. 18th-20th November 2022.
- c. Koustav Chatterjee, **Subhadip Paul**, Rebecca Banerjee, Supriyo Choudhury, Mona Tiwari, Hrishikesh Kumar. Brain morphometries and gait dysfunction in Progressive Supranuclear Palsy and Vascular Parkinsonism. 6th National Conference Of Movement Disorders Society Of India - MDSICON 2021-22 · 13th - 15th May 2022.
- d. **Manohar Kumar Pahan**, Mahendra Kumar Singh. Change in living environment and its impact on Reactive stress tolerance in preadolescent sport cadets of Jharkhand. ISAMCON 2022. Sri Ramachandra University, Chennai. 18th-20th March, 2022.
- e. **Arya R, Brahmacharin Ajātacaitanya**. Interconnectedness of causes of suffering: Samkhya Yoga and Ayurveda, National Yoga Conference on Yoga Sashtra, 25-27 February 2022
- f. **Majhi S, Brahmacharin Ajātacaitanya**. Role of divine grace in attaining cittavritti-nirodha, National Yoga Conference on Yoga Sashtra, 25-27 February 2022

### 5. List of Workshop, seminars, symposiums, Invited talks, colloquium

Month/date	SeminarWorkshop
11-12 March 2023	Two day Symposium and Workshop on 'Sports Medicine and Rehabilitation'- <b>85 registrations</b> <a href="https://sy.rkmvu.ac.in/symp-wrksp-sports-medicin-e-rehabilitation-11-12-mar-2023/">https://sy.rkmvu.ac.in/symp-wrksp-sports-medicin-e-rehabilitation-11-12-mar-2023/</a>
21-22 January 2023	Two day Symposium and Workshop on 'Advances in Brain & Cognition Research'- <b>85 registrations</b> <a href="https://sy.rkmvu.ac.in/symp-wrksp-advances-in-brain-cognition-research-jan-2023/">https://sy.rkmvu.ac.in/symp-wrksp-advances-in-brain-cognition-research-jan-2023/</a>
12 December 2022	One day APPICON sponsored workshop on Assessing exercise-induced stress on cardio-respiratory & neuro-cognitive responses'- <b>22 registrations</b> <a href="https://sy.rkmvu.ac.in/appicon-2022-workshop/">https://sy.rkmvu.ac.in/appicon-2022-workshop/</a>



## Ramakrishna Mission Vivekananda Educational and Research Institute

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

Month/date	Seminar/Workshop
28 November - 3 December 2022	One week long immersion program on “Adapted and Sports Biomechanics” - <b>30 participants</b> <a href="https://sy.rkmvu.ac.in/one-week-immersion-program-in-adapted-sports-sports-biomechanics-nov-dec-2022/">https://sy.rkmvu.ac.in/one-week-immersion-program-in-adapted-sports-sports-biomechanics-nov-dec-2022/</a>

### 6. BoS meetings (dates, salient points, resolutions)

- BoS meeting for Yoga curriculum was held on 16 September 2022, it was resolved that 80 credits will be adopted as per new NCRF guidelines. Two Swayam courses were approved by BoS members to be taken for credit. The revised curriculum was finalized, it is available in [https://sy.rkmvu.ac.in/wp-content/uploads/2023/02/MSc\\_Yoga\\_Curriculum\\_2022.pdf](https://sy.rkmvu.ac.in/wp-content/uploads/2023/02/MSc_Yoga_Curriculum_2022.pdf)
- BoS meeting for Sports Sc curriculum was held on 6 August 2022, it was resolved that 80 credits will be adopted as per new NCRF guidelines. Two Swayam courses were approved by BoS members to be taken for credit. The members also suggested to put internship program (as SAI or other appropriate institutes) as a compulsory component and preferably in the 4th semester. The revised curriculum was prepared, it is available in [https://sy.rkmvu.ac.in/wp-content/uploads/2023/02/MSc\\_Sports\\_Sc\\_Curriculum\\_2022.pdf](https://sy.rkmvu.ac.in/wp-content/uploads/2023/02/MSc_Sports_Sc_Curriculum_2022.pdf)

### 7. Research Advisory meetings, Half yearly JRF/SRF scholar presentations and dates

JRF scholar presentations were held during November-December 2022. All the candidates' presentations were found suitable for the candidates' continuation.

### 8. Efforts taken to promote the degree program and increase visibility

A one day Open House Counseling session was held on Studying Sports Science on 17 July 2022. A total of 25 participants who are in the final year of BSc came from various colleges and attended the session. Two faculty members, Dr [Arnab Das](#) and Dr [Manohar Pahan](#) spoke about the career prospects of studying Sports Science at MSc level. Mr Karanveer Singh, Sports Psychologist, High-Performance Center, JRD Sports, Tata Steel, Jamshedpur was invited as special speaker and he delivered an interactive lecture on sports science as a subject of study and career. Details of the program is available in <https://sy.rkmvu.ac.in/open-house-counselling-studying-sports-science-17-july-2022/>



## **Ramakrishna Mission Vivekananda Educational and Research Institute**

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

### **9. Research Projects**

#### **Projects applied and sanctioned**

- a. The SSY Department has applied for DST FIST'23 grant for setting up a "Centre of Excellence to Conduct Multidisciplinary Research for Enhancing Sports Performance of Elite Sports Persons of National Level".
- b. Dr Arkadeb Dutta has applied for IKS 2023 call for proposal, his project was "The Effect of Sanskrit Chanting on Cognitive Capabilities of Young Adults"

#### **Projects Ongoing**

Dr Arkadeb Dutta is conducting project on "Yoga intervention for Knee Osteoarthritis (Jānu Saṁdhigata Vāta)". With the help of research scholar Soumyajyoti Ghoshal, he is conducting a survey of patients in the south Bengal region. He has recently completed an academic work, titled "A Systematic Review on Panchakarma-Based Ayurveda Treatment in Janu Sandhigata Vata" which is forthcoming in International Journal of Ayurvedic Medicine (IJAM)

#### **Projects Completed**

None

### **10. Initiatives to improve/harmonize the student community life**

A new prayer hall is setup for the students in the science hostel upon their request. The students gather in the hall on their own every evening and observe prayer and meditation.

### **11. Initiatives to promote research / employability in the MSc curriculum**

- a. In the MSc Sports Sc curriculum we have introduced courses in Statistics, and Applied Sports Physiology in the third semester which are meant to give an early introduction to advanced and applied sports science.
- b. In the MSc Yoga curriculum we have enhanced practical classes by engaging a teacher from KYM Chennai to take online classes. A new course on Science of Pranayama has also been introduced to give them concrete scientific evidence based knowledge on the psychophysiology of pranayama practice.

### **12. Initiatives to impart value added skills**

The following value added activities were conducted during the odd semester.

- a. Computer Applications - a 2 cr course in which hands on training was imparted on type setting and powerpoint presentation (in LibreOffice)

## **II. Resolutions**

The committee took note of all the quality initiatives, approving all the completed ones and resolving to monitor till completion the pending and ongoing ones as listed in the following resolutions.



## **Ramakrishna Mission Vivekananda Educational and Research Institute**

(formerly known as Ramakrishna Mission Vivekananda University)

(Declared by Government of India as Deemed-to-be-University under section 3 of UGC Act, 1956)

PO Belur Math, Dist Howrah 711202, West Bengal, India

1. Integrate Common University Entrance Test (CUET) with the existing admission procedures for admission into various Master's programmes
2. Introduction of Artificial Intelligence topics in curriculum of Physics department
3. Submitting AQAR'21-22 needs to be expedited, following which submission of AQAR'22-23 needs to be carried out.
4. Fast-track the preparation of learning materials so that the Online MA Sanskrit programme could be started from next academic session i.e. 2023-24.