K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

School of Basic and Applied Sciences

School Handbook

2024-25

K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Table of Contents

1. About the School

K.R. Mangalam University, located on Sohna Road, Gurugram, is a rapidly growing and highly promising institution in India's higher education landscape. Established in 2013 through an act of the Haryana Legislature under the Haryana Private Universities Act (Amendment) 8 of 2013, it is recognized by the University Grants Commission (UGC) under Section 2(f) of the UGC Act, 1956. The university is dedicated to fostering excellence in basic and professional education while upholding moral and ethical values.

The School of Basic and Applied Sciences (SBAS), a constituent of K.R. Mangalam University, was established in 2013 with the launch of its inaugural programme, B.Sc. (Hons.) Chemistry. Over the years, it has expanded its academic portfolio, introducing B.Sc. (Hons.) Physics in 2014, followed by M.Sc. Physics in 2015, and subsequently B.Sc. (Hons.) Mathematics and M.Sc. Mathematics in the same year. In 2022, the school introduced B.Sc. (Hons.) Forensic Sciences, further diversifying its offerings. Aligned with the National Education Policy (NEP) 2020, SBAS launched four-year undergraduate programmes in Chemistry, Physics, and Mathematics in 2023. In 2024, the school expanded its programmes in Forensic Sciences to include a four-year B.Sc., a five-year integrated B.Sc.-M.Sc., and an M.Sc. programme. Presently, SBAS offers 10 academic programmes, enrolling 296 students, and supports robust research activities through Ph.D. programmes in Physics, Chemistry, and Mathematics with a strength of 49 research scholars.

SBAS is deeply committed to the principles of NEP 2020, striving to establish an inclusive, holistic, and forward-looking education system that equips students for the demands of the 21st century. The school emphasizes Outcome-Based Education (OBE), fostering an innovative and flexible multidisciplinary curriculum. This curriculum enables students to design their own learning trajectories by combining credit-based courses across various disciplines with value-added offerings, including Indian Knowledge Systems, vocational training, community engagement projects, environmental education, value education, and skill development.

The school adheres to the "Curriculum and Credit Framework for Undergraduate Programmes (CCFUP)," which incorporates a flexible Choice-Based Credit System (CBCS), Learning Outcome-based Curriculum Framework (LOCF), a multidisciplinary approach, and multiple entry and exit options. This framework allows students to tailor their academic paths and pursue careers aligned with their interests.

The SBAS curriculum is carefully aligned with industry and job market demands, designed to adapt to evolving trends and technologies. It integrates cross-cutting themes such as professional ethics, gender, human values, environmental sustainability, and the United Nations' Sustainable Development Goals (SDGs). Each course features clearly defined objectives and learning outcomes, enabling students to select electives that broaden their skills across sciences and interdisciplinary fields. The curriculum ensures a strong foundation in theoretical and experimental knowledge, meeting the requirements of academia and industry while preparing students for research careers. Regular syllabus updates incorporate contemporary needs, informed by feedback from stakeholders, including students, alumni, parents, faculty, employers, industry representatives, and academic experts.

2. Vision and Mission

2.1 University

Vision

K.R. Mangalam University aspires to become an internationally recognized institution of higher learning through excellence in inter inter-disciplinary education, research and innovation, preparing socially responsible lifelong learners contribute to nation building.

Mission

- Foster employability and entrepreneurship through futuristic curriculum and progressive pedagogy with cutting-edge technology
- Instill notion of lifelong learning through stimulating research, Outcomes-based education and innovative thinking
- Integrate global needs and expectations through collaborative programmes with premier universities, research centres, industries and professional bodies
- Enhance leadership qualities among the youth having understanding of ethical values and environmental realities

2.2 School

Vision

To be a premier school for advanced learning and research in the field of basic and applied sciences.

Mission

- Collaborations with national, international academic & research organizations and industries for knowledge creation, advancement, and application of innovative practices in sciences.
- Create a conducive environment for lifelong learning.
- Empower students to be socially responsible and ethically strong individuals through value-based science education.

3. Messages

3.1 Vice Chancellor- Prof. Raghuvir Singh

Congratulations on your admission to K.R. Mangalam University!

Dear Student,

I welcome you for joining K R Mangalam University.

You have taken the first step toward one of the most exciting times in your life, and everyone on the campus is committed to making your experience at KRMU worth remembering.

Established in 2013 KRMU has been implementing and adapting the ever-changing industry trends to be germane. At KRMU, we provide its students with the opportunity to excel in academics and in activities that make them global leaders altogether.

We have developed on a mission mode a system of preparing highly talented faculty in large numbers with specializations in diverse areas (interdisciplinary and trans disciplinary areas) with more autonomy and awards for productivity in terms of pedagogy, skill enhancement, research and mentor for creativity and innovations.

Our programmes have been tailored with the help of industry/Alumni especially catering to the career paths for each student based on his STEM (Science Technology, Engineering & Math's) or STEAMM and Arts, commerce and Management with skills that match industry needs, updated curriculum, focus on employability skills, Internship Programmes, Corporate/Company Trips, Case Competitions, Consulting Field Projects, Teamwork and mentor's mentee relationships.

The curriculum is updated based on Values framework of NAAC (National Accreditation and Assessment Council) i.e., Contributing to National Development, Fostering National Global Competencies, inculcating a Value System, Promoting the Use of Technology and quest of excellence among Students. Our programmes are customized with career paths for placements with high salaried jobs and the upcoming 4th Industrial Revolution the advent of "cyber-physical systems" involving entirely new capabilities for people and machines.

Employability is being enhanced by Cross cultural programmes, International Exchange Student Programmes, Global Education/Knowledge, Global Scoring Systems, Corporate Alliances, Mentoring by Alumni, Dedicated Career Management Center and entrepreneurship programme through Innovation Ecosystem.

The endorsement of the quality of education imparted at K.R. Mangalam University and its allied schools are the trust of over 150+ companies who have visited the campus year after year to recruit our corporate-ready students.

We are pleased to offer you provisional admission to KRMU. Your admission to the university will be confirmed and you will be registered as our student when we have scrutinized your documents and eligibility as per the university policies.

Wishing you all the very best for a great academic journey at KRMU!

3.2 Dean- Prof. Meena Bhandari

As the Dean of the School of Basic and Applied Sciences, I'm immensely proud of our commitment to delivering immersive education since our establishment in 2013. Offering undergraduate, postgraduate, and PhD programmes in Physics, Chemistry, Mathematics, and Forensic Sciences, our aim is to equip students with the knowledge and skills to serve society and organizations effectively. Our curriculum emphasizes academic excellence, professional competence, and addressing societal and environmental challenges, fostering a culture of innovation and ethical responsibility. We cultivate a learning environment where students can drive positive change, with opportunities for industry engagement, global collaboration, and community outreach. Our faculty, with extensive industrial experience and dedicated research, are at the forefront of tackling real-world issues. Join us in our journey of lifelong learning and become part of our vibrant community.

4. School Boards and Committees

4.1 Board of Studies

The Board of Studies of SBAS consists of the following members:

S.No.	Name	Designation
1.	Dr. Meena Bhandari	Chairperson (Dean & Professor-Chemistry)
2.	Dr. Pawan Kumar	Member (Professor- Physics)
3.	Dr. Diwakar Padalia	Member (Associate Professor- Physics)
4.	Dr. Dilraj Preet Kaur	Member (Associate Professor- Physics)
5.	Dr. Ruby Jindal	Member (Associate Professor- Physics)
6.	Dr. Kriti	Member (Assistant Professor- Physics)
7.	Dr. Seema Raj	Member (Associate Professor- Chemistry)
8.	Dr. Chandra Mohan	Member (Associate Professor-Chemistry)
9.	Dr. Suman Srivastava	Member (Assistant Professor- Chemistry)
10.	Dr. Yogendra Kr Rajoria	Member (Associate Professor- Mathematics)
11.	Dr. Rupali	Member (Assistant Professor- Mathematics)
12.	Dr. Pooja Vats	Member (Assistant Professor- Mathematics)
13.	Dr. Mandeep Purba	Member (Assistant Professor- Forensic Sciences)
14.	Prof. P.C. Jha	External Member (Professor- Mathematics, University of Delhi)
15.	Dr. Dhanraj T. Masaram	External Member (Assosciate Professor- Chemistry, University of Delhi)
16.	Dr. Asha Srivastav	External Member (Dean, School of Forensic Science, NFSU, Gujarat)
17.	Dr. Shobhna Choudhary	External Member (Principal Scientist, CSIR-Human Resource Development Centre, Ghaziabad)

The tenure of the Board of Studies (B.O.S.), School of Basic and Applied Sciences, K.R. Mangalam University members will be of two years from the date of the notification.

4.2 School Research Committee

The school research committee of SBAS consists of the following members:

S.No.	Name	Designation
1.	Dr. Meena Bhandari	Chairperson (Professor-Chemistry)
2.	Dr. Pawan Kumar	Member (Professor- Physics)
3.	Dr. Diwakar Padalia	Member (Associate Professor- Physics)
4.	Dr. Dilraj Preet Kaur	Member (Associate Professor- Physics)
5.	Dr. Seema Raj	Member (Associate Professor- Chemistry)
6.	Dr. Chandra Mohan	Member (Associate Professor-Chemistry)
7.	Dr. Suman Srivastava	Member (Assistant Professor- Chemistry)
8.	Dr. Yogendra Kr Rajoria	Member (Associate Professor- Mathematics)
9.	Dr. Rupali	Member (Assistant Professor- Mathematics)
10.	Dr. Mina Yadav	Member (Assistant Professor- Mathematics)
11.	Dr. Pallavi Pandey	External Member (Assistant Professor- SOET)
12.	Dr. Rajni Gautam	Member Secretary (Assistant Professor-Physics)

The tenure of the School Research Committee (SRC), School of Basic and Applied Sciences, K.R. Mangalam University members will be two years from the date of the notification.

4.3 Academic Coordination: Roles and Responsibilities

To achieve the vision and mission of SBAS, the school operates with a well-defined organizational structure, where every individual plays a pivotal role in ensuring the smooth functioning of academic and administrative activities. From strategic leadership to hands-on support for students, each role contributes to creating a conducive environment for learning, growth, and collaboration. Below is an outline of the key roles and responsibilities within the school.

Dean: Prof. Meena Bhandari is dean of School of Basic and Applied sciences. She provides strategic leadership for the school, overseeing academic, research, and administrative functions. She ensures the development, implementation, and periodic revision of academic programmes and curriculum while monitoring and enhancing the quality of education and research output. Acting as a liaison between the school and university administration, students, parents, and external stakeholders, the Dean facilitates collaborations, partnerships, and resource allocation. She manages the school's budget, oversee faculty recruitment and development, and address grievances to maintain a conducive environment for teaching and learning.

Programme Coordinator: The Programme Coordinator ensures the smooth execution of academic programmes, aligning them with university policies. They work closely with faculty to design, update, and deliver course content effectively while addressing student academic issues and monitoring their progress. Coordinating with the timetable coordinator, they ensure proper scheduling of courses and maintain records for accreditation compliance. The coordinator also fosters communication among faculty members teaching within the programme. We have in total 4 programme coordinators, one for each discipline. The list is shared below:

Dr. Rishi Ranjan Kumar-Physics

Dr. Mamta Raj- Chemistry

Dr. Mina Yadav- Mathematics

Ms. Ruddhidha R Vidhwans- Forensic Science

Mentor: Every student enrolled in the school is considered a mentee and will be assigned a faculty member as their mentor. The mentor's role is to guide and support the mentee, helping them grow both personally and professionally. Mentors act as coaches by giving feedback, sharing advice, and offering insights from their own experiences. They also challenge the mentee's thinking, help them make important decisions, and connect them to valuable resources and networks. Additionally, mentors provide emotional support, celebrating successes and offering encouragement during tough times. On the other hand, the mentee's role is to actively participate in the learning process by planning meetings, setting goals, and communicating openly with their mentor. Mentees should also apply what they learn, continue growing outside the mentor-mentee relationship, and stay proactive in seeking new opportunities. By staying committed and enthusiastic, mentees can make the most of this relationship and achieve their goals. Following is the list of mentors of SBAS:

Dr. Mehak Ahuja- Chemistry

Dr. Neeraj Kumari- Chemistry

Dr. Pratibha Sharma- Chemistry

Dr. Rupali- Mathematics

Dr. Pardeep Kumari- Mathematics

Dr. Mohabbat Ali- Mathematics

Dr. Rishi Ranjan Kumar- Physics

Dr. Vicky Kapoor- Physics

Dr. Pawan Kumar- Physics

Mr. Nitin Tyagi- Forensic Science

Ms. Ruddhidha R Vidhwans- Forensic Science

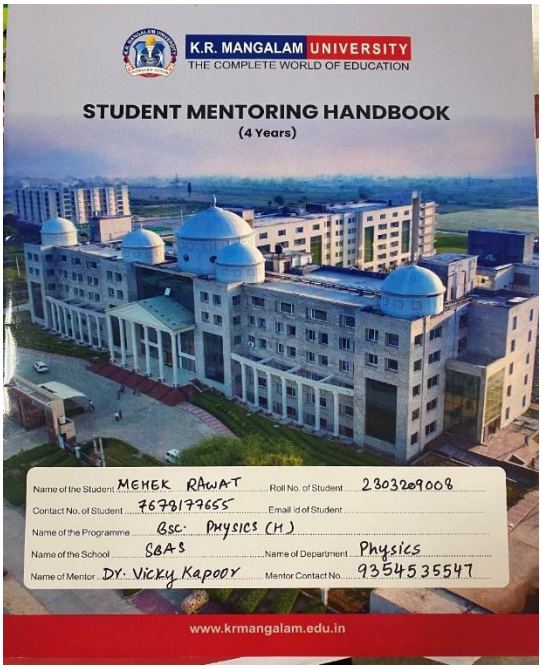
Dr. Shivani Sehgal- Forensic Science

Ms. Kritika Singh- Forensic Science

Ms. Saloni arora- Forensic Science

Dr. Muskan Soni- Forensic Science

Ms. Anuradha Singh- Forensic Science



Glimpse of student mentoring handbook manitain by Mentors for each mentee separately.

Timetable Coordinator: The Timetable Coordinator manages the academic schedule for all programmes within the school, ensuring proper allocation of faculty and resources. They resolve scheduling conflicts, collaborate with lab supervisors for seamless lab sessions, and promptly communicate timetable updates to faculty and students. By optimizing classroom and lab usage, the coordinator ensures smooth academic operations. Dr. Mina Yadav, Dr. Ritika Khatri, Dr. Seema Raj, and Mr. Nitin Tyagi are time table coordinators of Mathematics, Physics, Chemistry and Forensic Science, respectively.

Examination Coordinator: The Examination Coordinator organizes internal assessments, mid-semester, and end-semester examinations in coordination with the university examination cell. They oversee the preparation, submission, and confidentiality of question papers and manage the invigilation schedule. Additionally, they supervise the evaluation process, ensuring accurate and timely submission of results while adhering to university examination policies and procedures. Dr. Diwakar Padalia, Dr. Seema Raj, Dr. Yogendar Kumar Raajoria, and Mr. Nitin Tyagi are examination coordinators of physics, Chemistry, Mathematics, and Forensic Science, respectively.

Lab In-Charge: The Lab Supervisor is responsible for maintaining the functionality and organization of laboratories. They manage the inventory of equipment and consumables, ensure compliance with safety protocols, and assist faculty and students during lab sessions. By providing a well-equipped and safe environment for experiments, the supervisor supports effective practical learning. Lab In-charge of different Labs are listed below:

Dr. Nitish Yadav, Dr. Diwakar Padalia- Physics Laboratories

Dr. Suman Srivastava, Dr. Sujata Kumari- Chemistry Laboratories

Dr. Shivani Sehgal- Forensic Science Laboratory

Besides the above roles and responsibilities, each faculty brings subject expertise to their teaching, research, and mentoring roles. They design and update course content to align with modern developments, conduct impactful research, and publish their findings. Teachers guide students in discipline-specific projects and research while fostering interdisciplinary collaborations. They also organize seminars, workshops, and conferences to provide students and faculty with exposure to current advancements and industry trends.

This structure promotes efficiency in academic and administrative operations while ensuring holistic student development and academic excellence.

5. Faculty and Staff

The School of Basic and Applied Sciences (SBAS) is supported by a dedicated and highly qualified faculty of 39 members, with 62% female and 38% male representation. The faculty includes 11 members in Chemistry, 7 in Forensic Science, 11 in Mathematics, and 10 in Physics. Among the total faculty, 30 have earned their doctoral degrees, and 18 are NET qualified. The faculty composition includes 2 Professors, 6 Associate Professors, and 30 Assistant Professors. Additionally, the non-teaching staff consists of 5 Lab Technicians and 1 Office Assistant. All faculty members at SBAS are experienced, motivated, and hardworking, equipped with the necessary qualifications and expertise to guide and mentor students effectively, ensuring a high-quality educational experience.

LIST OF FACULTY MEMBERS

S. No.	NAME	DESIGNATION	DISCIPLINE
1	Dr. Meena Bhandari	Professor & Dean	Chemistry
2	Dr. Pawan Kumar	Professor	Physics
3	Dr. Diwakar Padalia	Associate Professor	Physics
4	Dr. Dilraj Preet Kaur	Associate Professor	Physics
5	Dr. Seema Raj	Associate Professor	Chemistry
6	Dr. Chandra Mohan	Associate Professor	Chemistry
7	Dr. Ruby Jindal	Associate Professor	Physics

8	Dr. Yogendra Rajoria	Associate Professor	Mathematics
9	Dr. Rajni Gautam	Assistant Professor- Selection Grade	Physics
10	Dr. Pooja Vats	Assistant Professor- Senior Scale	Mathematics
11	Dr. Mina Yadav	Assistant Professor- Senior Scale	Mathematics
12	Dr. Neeraj Kumari	Assistant Professor- Senior Scale	Chemistry
13	Dr. Ritika Khatri	Assistant Professor	Physics
14	Dr. Kriti	Assistant Professor	Physics
15	Dr. Vicky Kapoor	Assistant Professor	Physics
16	Dr. Nitish Yadav	Assistant Professor	Physics
17	Dr. Rishi Ranjan Kumar	Assistant Professor	Physics
18	Dr. Suman Srivastava	Assistant Professor	Chemistry
19	Dr. Sujata Kumari	Assistant Professor	Chemistry
20	Dr. Mehak Ahuja	Assistant Professor	Chemistry
21	Dr. Deepak Yadav	Assistant Professor	Chemistry
22	Dr. Pratibha Sharma	Assistant Professor	Chemistry
23	Dr. Divyanshi Mangla	Assistant Professor	Chemistry
24	Dr. Mamta Raj	Assistant Professor	Chemistry
25	Dr. Aina Gupta	Assistant Professor	Mathematics
26	Dr. Pradeep Kumar	Assistant Professor	Mathematics
27	Dr. Rupali	Assistant Professor	Mathematics
28	Ms. Sapna	Assistant Professor	Mathematics
29	Dr. Saloni Rathee	Assistant Professor	Mathematics
30	Dr. Kanchan Jhangra	Assistant Professor	Mathematics
31	Dr. Mohabbat Ali	Assistant Professor	Mathematics
32	Dr. Prawar	Assistant Professor	Mathematics
33	Mr. Nitin Tyagi	Assistant Professor	Forensic Science

34	Ms. Ruddhidha R Vidhwans	Assistant Professor	Forensic Science
35	Dr. Shivani Sehgal	Assistant Professor	Forensic Science
36	Ms. Kritika Singh	Assistant Professor	Forensic Science
37	Ms. Saloni arora	Assistant Professor	Forensic Science
38	Dr. Muskan Soni	Assistant Professor	Forensic Science
39	Ms. Anuradha Singla	Assistant Professor	Forensic Science

6. School Infrastructure (Physical and learning)

The School of Basic and Applied Sciences offers a comprehensive range of teaching and learning resources that enhance both the academic experience and professional preparedness of students. Its state-of-the-art infrastructure includes smart classrooms with modern teaching tools, a well-stocked library, computer labs, and six specialized laboratories-two for physics, three for chemistry, one for forensic science, and a Central Instrumentation Facility for research. The school also employs highly qualified and experienced PhD and non-PhD faculty, ensuring expert guidance in both theoretical and practical learning.

In addition to physical infrastructure, the school provides a robust virtual environment with tools like an LMS (Moodle) for coursework management, virtual labs for remote experimentation, and 24/7 Wi-Fi access, fostering a flexible and technology-driven learning experience. The integration of Massive Open Online Courses (MOOCs) and experiential learning opportunities ensures that students are well-prepared for academic success and professional excellence. The curriculum is carefully designed to engage students across all levels of Bloom's Taxonomy, promoting not only cognitive development but also emotional, social, and ethical growth. Continuous feedback from stakeholders, including faculty, industry experts, students, and alumni, ensures that the curriculum remains current, relevant, and aligned with the evolving needs of academia and industry.

Smart Classrooms




LAB facilities in SBAS

Research Facility (CIF): The School of Basic and Applied Sciences is equipped with a Central Instrumentation Facility (CIF), providing cutting-edge research tools for faculty, graduate students, and Ph.D. scholars. This facility enables advanced research in various scientific fields, offering access to sophisticated instruments for materials characterization, spectroscopy, microscopy, and other high-precision analyses. The CIF supports interdisciplinary research, allowing users to conduct in-depth experiments and gather critical data for their projects. By fostering a collaborative environment and offering top-tier resources, the CIF plays a vital role in enhancing the research capabilities of the school, contributing to scientific advancements and innovation.

Central Instrumentation Research Facility in SBAS.

Engineering Kitchen:




Glimpses of faculty and students doing research work in Engineering Kitchen.

7. Best Practices

The School of Basic and Applied Sciences (SBAS) at K.R. Mangalam University fosters a dynamic and holistic learning environment by integrating various best practices into its educational framework. These practices combine academic rigor with real-world applications, ensuring that students not only acquire theoretical knowledge but also develop practical skills, critical thinking, and a sense of social responsibility. SBAS emphasizes the importance of experiential learning, encouraging students to engage with community-driven initiatives and sustainability projects that bridge the gap between classroom education and societal needs.

One of the primary approaches at SBAS is the incorporation of social outreach programmes that provide students with opportunities to apply their academic learning to address real-world issues. Through service-learning components, students engage in projects such as health awareness programmes, environmental sustainability efforts, and educational outreach in local communities. These activities not only enhance academic understanding but also cultivate critical skills like teamwork, project management, and communication. Students actively participate in case studies, community surveys, and awareness campaigns that focus on important social issues, fostering a sense of civic responsibility and community engagement.

This hands-on involvement allows students to gain valuable experience while contributing positively to their surroundings.

Parallel to this, SBAS promotes innovation in environmental sustainability through a variety of practical initiatives. Students are encouraged to engage in sustainability-focused projects, such as waste reduction, water conservation, and the development of eco-friendly solutions. These initiatives are embedded within the curriculum and are further supported by research opportunities that explore cutting-edge environmental challenges. Faculty members collaborate with environmental organizations and guide students through real-world case studies, where they apply their academic knowledge to solve complex environmental problems. The integration of environmental studies into the curriculum ensures that every student is equipped with the knowledge and skills to contribute to sustainability efforts, making them well-prepared for careers in the growing field of environmental science and sustainability.

Together, these best practices at SBAS create a comprehensive learning experience that combines academic learning with community involvement and environmental responsibility. Through these initiatives, students not only develop cognitive and psychomotor skills but also learn the importance of innovation, critical thinking, and active citizenship. The combination of classroom knowledge with real-world applications enhances students' academic engagement while promoting a deeper connection between education and its impact on society. This holistic approach ensures that graduates from SBAS are not only academically proficient but also responsible, ethical professionals ready to make meaningful contributions to the world.

Students taking oath to preserve environment on June 5, 2018.

8. **School Education Philosophy**

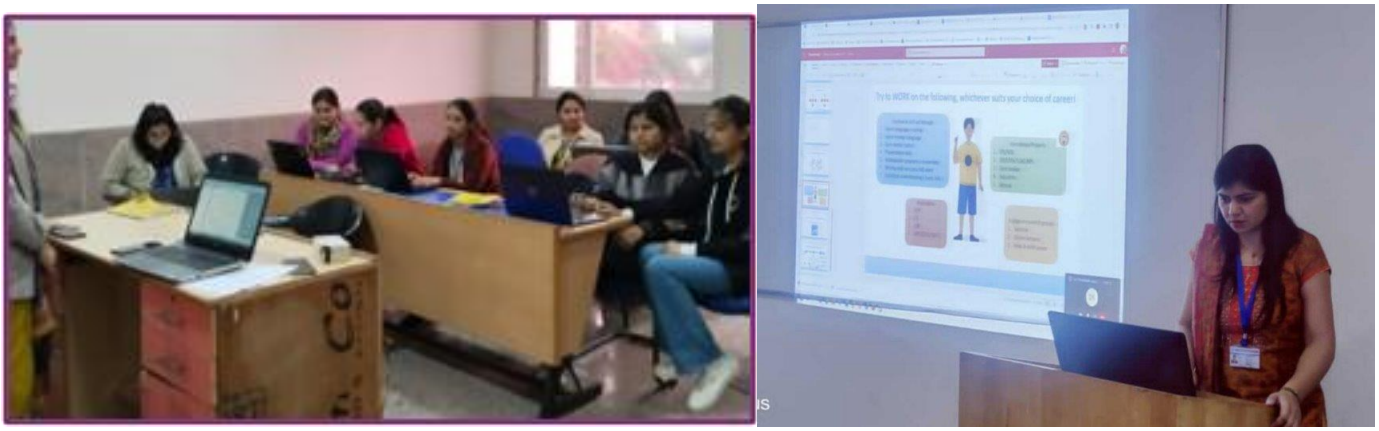
The educational philosophy of the School of Basic and Applied Sciences is built on fostering intellectual curiosity, critical thinking, and the practical application of scientific knowledge. Emphasizing a student-centric approach, SBAS integrates foundational science with real-world challenges, preparing students for leadership roles in both academia and industry. Through collaborations with national and international institutions, research organizations, and industries, the school provides cutting-edge resources and hands-on experiences that bridge the gap between theory and practice. SBAS is committed to empowering students with technical expertise while instilling ethical values, social responsibility, and a lifelong commitment to learning. The aim is to nurture well-rounded, innovative, and responsible individuals ready to contribute to scientific advancement and societal betterment.

Students of SBAS participating in Extracurricular activities

9. Educational Pedagogy (Inside and outside classroom)

The School of Basic and Applied Sciences (SBAS) at K.R. Mangalam University has adopted an outcome-driven learning pedagogy that ensures a balanced focus on both cognitive and psychomotor development, promoting the overall intellectual and emotional growth of students. This structured approach is designed to cover all aspects of learning—cognitive, psychomotor, and affective—ensuring that students not only master the academic content but also develop essential life and professional skills.

Inside the classroom, SBAS emphasizes cognitive development by employing student-centric learning techniques such as detailed demonstrations, interactive workshops, guest lectures by industry experts, and hands-on practicals in well-equipped laboratories. These methods ensure that students engage deeply with the subject matter, building strong foundational knowledge and critical thinking skills. The practical aspects of learning allows them to directly observe and experiment with scientific principles, reinforcing theoretical knowledge and fostering a deeper understanding of complex concepts.



Outside the classroom, SBAS provides numerous opportunities for the development of psychomotor skills and affective growth. Students engage in conferences, internships, real-world projects, industry visits, and case studies, which offer practical exposure to industry trends and challenges. These activities not only hone their technical and problem-solving abilities but also cultivate interpersonal and teamwork skills, leadership, and a sense of responsibility. By working on projects and internships, students learn to apply their academic knowledge in real-world settings, bridging the gap between theoretical education and practical application.

Through this holistic, outcome-oriented pedagogy, SBAS ensures that its students are well-prepared for the demands of both academic and professional life. By integrating cognitive and psychomotor learning, the

school fosters not just academic excellence but also personal and professional development, equipping students to meet future challenges confidently and competently.

B. Sc. (H) Forensic Science 2nd Year bagged first prize in **Summer Internship Competition** held at **Sushant University**

Anthropology Museum, University of Delhi 11/4/2024

Visit to TERI Under DST- Entrepreneurship Awareness Camp on 18/01/19

Mortuary Civil Hospital, Gurugram 2/4/2024

10. Assessment & Evaluation

a. Evaluation scheme for theory courses

Evaluation Component	**Weightage**
Internal Marks (Theory): - **I) Continuous Assessment (30 Marks)** **(All the components to be evenly spaced)** Projects/ Quizzes/ Assignments and Essays/ Presentations/ Participation/ Case Studies/ Reflective Journals (minimum of five components to be covered)	30 Marks
Mid Term Exam	20 Marks
External Marks (Theory): – End Term Examination	50 Marks

*** (It is compulsory for a student to secure 40% marks in the Internal and End Term Examination separately to secure minimum passing grade).**

Overview of Internal Evaluation (30 Marks) –

Internal evaluation is designed to assess students' ongoing learning and application of course materials through diverse assessment methods. Instructors have full autonomy within the 30 marks to employ assessment strategies that best align with the course's learning objectives.

Recommended Assessment Types: -

Projects: - Individual or group projects focusing on research, analysis, and practical application of concepts.

Quizzes: - Regular, short assessments to evaluate understanding of the material.

Assignments and Essays: - In-depth tasks to assess critical thinking and problem-solving skills.

Presentations: - Assessing knowledge dissemination and communication skills.

Participation: - Evaluation of engagement and contributions to class activities.

Case Studies: - Application of theoretical knowledge to real-world scenarios.

b. Evaluation scheme for practical courses

Particular	**Weightage**
Internal Marks (Practical): -	
I) Conduct of Experiment	10 Marks
II) Lab Records	10 Marks
III) Lab Participation	10 Marks
IV) Lab Project	20 Marks
External Marks (Practical): -	
End Term Practical and Viva Voce	50 Marks

*** (It is compulsory for a student to secure 40% marks in Internal and End Term Practical's and Viva Voce separately to secure minimum passing grade).**

c. Evaluation scheme for research project

Particular	**Weightage**
Internal Marks: - (Punctuality, Performance, Work Ethics, Efforts and Research Output)	50 Marks
External Marks (Practical): -	50 Marks
Presentation	20
Report Writing	10
Viva Voce	20

***(It is compulsory for the student to provide an internship certificate issued by the relevant institution or organization where they completed their internship during the evaluation process.)**

d. Evaluation scheme for Internship

Particular	Weightage
Internal Marks: - Internship completion certificate obtained from supervisor from host institute.	30 Marks
External Marks (Practical): - Presentation Report Writing Viva Voce	70 Marks 25 25 20

e. Grading System

Based on the performance in all evaluation components of a Course, each student will be awarded a final grade in the Course registered, at the end of the semester. The total marks obtained by a student in the Course will be converted to a corresponding letter grade as described below.

Marks Range (%)	Letter Grade	Grade Points	Description of the Grade
% marks > 90%	O	10.0	Outstanding
80 < %marks ≤ 90	A+	9.0	Excellent
70 < %marks ≤ 80	A	8.0	Very Good
60 < %marks ≤ 70	B+	7.0	Good
55 < %marks ≤ 60	B	6.0	Above Average
50 < %marks ≤ 55	C	5.5	Average
40 ≤ %marks ≤ 50	P	5.0	Pass
%marks < 40	F	0	Fail
-	AB	0	Absent
%marks ≥ 50	S	-	Satisfactory
%marks < 50	U	-	Unsatisfactory
-	W	0	Withdrawal

11. Collaborations

The School of Basic and Applied Sciences (SBAS) actively engages in collaborations through Memorandums of Understanding (MoUs) with various educational, research, and industrial institutions. These partnerships facilitate a range of activities designed to promote the academic and professional growth of both students and faculty. Under these MoUs, SBAS organizes student internship programmes, offering practical industry exposure, and educational visits that broaden students' understanding of real-world applications. Collaborative

research efforts often result in joint publications and patents, enhancing the school's contribution to scientific advancements. Additionally, workshops, seminars, and Faculty Development Programmes (FDPs) are conducted regularly, providing opportunities for skill development, knowledge sharing, and networking with experts from diverse fields. These initiatives help students and faculty stay updated with the latest trends and advancements, fostering overall progress in their academic and professional journeys.

At present, the School of Basic and Applied Sciences (SBAS) has signed 12 Memoranda of Understanding (MoUs) with various esteemed institutions, fostering collaborations and enhancing academic and research opportunities. The institutions involved include RJ Forsec Solution Pvt Ltd, Shivaji College (University of Delhi), Gargi College (University of Delhi), Deshbandhu College (University of Delhi), the Council for Teacher Education, Sherlock Institute for Forensic Science, Hawk Eye Forensic, Ramjas College (University of Delhi), Hansraj College, Normi Research Foundation, Gargi College (University of Delhi), and J M Environet Pvt Ltd. These partnerships contribute to a robust network of academic exchange, internships, and collaborative research, enriching the educational experience for students and faculty alike.

12. Programmes Offered by the School

12.1 About the Programme: Bachelor of Sciences (Honours / Honours with Research) Physics

The B.Sc. (Hons. / Hons. with Research) Physics is an undergraduate academic programme designed to provide students with a comprehensive foundation in the fascinating world of physics. This programme offers a rigorous and engaging curriculum that covers diverse areas such as classical mechanics, electromagnetism, quantum mechanics, thermodynamics, and more. Students in this programme will study fundamental principles of the universe, engage in complex problem-solving, and enhance their analytical and critical thinking skills. Combining hands-on lab work with theoretical learning, they'll gain practical experience and a solid grasp of scientific research methods. The B.Sc. (Hons. / Hons. with Research) Physics programme prepares students for exciting career opportunities in scientific research, technology, education, and various other fields that require a strong grasp of physics principles and applications.

- **Nature of B.Sc. (Honours / Honours with Research) Physics Programme**

Taking the NEP-2020 as an opportunity to review our existing academic programmes and redesign them for a more holistic, multidisciplinary and inclusive education, SBAS, K.R. Mangalam University, is transforming its academic structure in a phased manner. School of Basic and Applied Sciences is offering Four Year Undergraduate Degree programme B.Sc. (Hons. / Hons. with Research) Physics with Multiple Entry- Multiple Exit option from the academic session 2023-24. Through multiple entry/exit options, students will be able to enter and exit the programme at various stages. This course emphasized hands on practice, innovative thought process and project-based learning.

- **Aims of B.Sc. (Honours / Honours with Research) Physics Programme**

The aims of the B.Sc. (Hons. / Hons. with Research) Physics programme, in accordance with the National Education Policy (NEP), are multifaceted and comprehensive. The programme aims to cultivate a strong foundation in physics principles and foster a deep understanding of the subject. It seeks to promote critical thinking, analytical skills, and problem-solving abilities among students, enabling them to address real-world challenges effectively. The B.Sc. (Hons. / Hons. with Research) Physics programme also encourages research-

oriented thinking and provides opportunities for students to engage in scientific inquiry and exploration. By emphasizing hands-on laboratory work and practical applications, the programme aims to equip students with the necessary skills for conducting experiments and analyzing data. Moreover, the programme seeks to foster an interdisciplinary approach, enabling students to connect physics with other scientific disciplines and societal issues. Overall, the B.Sc. (Hons. / Hons. with Research) Physics programme aspires to produce well-rounded graduates with a passion for learning and a strong foundation in physics, ready to make significant contributions to the scientific community and society at large.

- **Programme Educational Objectives (PEOs)**

These are deferred outcomes measured a few years after completion of the programme, where:

PEO 1: Graduates will become globally competent professionals, suitable for careers in government, corporate, and research sectors, while also possessing skills for entrepreneurial ventures in multidisciplinary fields.

PEO 2: Graduates will demonstrate strong technical knowledge in physics and will be able to think critically and creatively to develop practical solutions to scientific and technological challenges.

PEO 3: Graduates will be ethical professionals who can lead and collaborate effectively in teams, contributing to both their own growth and the success of their organizations.

PEO4: Graduates will engage in lifelong learning and professional development, applying their expertise to benefit society and make meaningful contributions.

PEO5: Graduates will be well-equipped to pursue higher education and advanced research in physics and related disciplines.

- **Programme Outcomes (POs)**

At the time of graduation, students of undergraduate degree programme will be able:

PO1: To apply physics principles and mathematical techniques to effectively solve complex real-world problems.

PO2: To develop strong critical thinking skills, enabling them to analyze and evaluate evidence, arguments, and methodologies in physics research and applications.

PO3: To promote teamwork and collaborative learning, enabling students to contribute to and lead interdisciplinary research.

PO4: To build strong interpersonal skills to navigate diverse professional environments, collaborate effectively, and take on leadership roles.

PO5: To communicate complex scientific ideas and research findings clearly in both writing and presentations to scientific and non-scientific audiences.

PO6: To learn independently and stay updated with scientific advancements throughout their careers.

PO7: To acquire a strong commitment to ethical standards, responsible conduct in research, and professionalism in academic and industry settings.

PO8: To understand the impact of physics research on the environment and society and show a commitment to using sustainable and ethical practices in work.

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:

PSO1: Understanding fundamental concepts, laws, theories, tools and techniques in the field of physics.

PSO2: Applying mathematical techniques, theoretical models, and physical laws to solve complex scientific problems.

PSO3: Analyzing various real-life situations, problems, and challenges related to physics.

PSO4: Evaluating the validity of scientific arguments, theories, and experimental results, making reasoned judgments about the quality and reliability of research findings in physics.

PSO5: Operating laboratory instruments and experimental setups with accuracy, demonstrating skill in measuring, observing, and manipulating equipment to gather precise data.

PSO6: Exhibiting coordinated manual skills in conducting physics experiments, ensuring safe and efficient handling of materials, tools, and equipment while following detailed procedural steps.

- **Career Avenues**

Graduates can pursue careers in research and development (R&D) in industries, work as research scientists or assistants in academic and research institutions, or continue with higher education (M.Sc., PhD) leading to academic or specialized roles in physics. Opportunities also exist in sectors like govt. jobs, defense services, data science, finance, and competitive examinations.

- **Duration**

The duration of this programme is four years (eight semesters) with multiple entry/exit options.

- **Criteria for award of certificates and degree**

Name of Degree	Credits requirement	Completion Year
UG Certificate Physics	43	First Year
UG Diploma Physics	96/94	Second Year
B.Sc. Physics	149/145	Third Year
B.Sc. (Hons. / Hons. With Research) Physics	173	Fourth Year

12.2 About the Programme: Bachelor of Sciences (Honours / Honours with Research) Chemistry

The B.Sc. (Hons. / Hons. with Research) Chemistry is a four-year undergraduate programme designed to provide students in the captivating realm of chemistry. This programme features a comprehensive and dynamic curriculum that delves into essential areas such as organic chemistry, inorganic chemistry, physical chemistry, and analytical chemistry. Students will investigate fundamental chemical principles, engage in complex problem-solving, and refine their analytical and critical thinking skills. The programme seamlessly integrates hands-on laboratory work with theoretical study, offering practical experience alongside a deep understanding of scientific research methods. By the end of the programme, students will be well-prepared for a range of career opportunities in scientific research, technology, education, and other fields that demand a deep comprehension of chemistry principles and applications. The B.Sc. (Hons. / Hons. with Research) Chemistry equips graduates with the knowledge and skills to excel in diverse professional environments and contribute meaningfully to advancements in the chemical sciences.

- **Nature of B.Sc. (Hons. / Hons. with Research) Chemistry Programme**

Taking the NEP-2020 as an opportunity to review our existing academic programmes and redesign them for a more holistic, multidisciplinary and inclusive education, SBAS, K.R. Mangalam University is transforming its academic structure in a phased manner. School of Basic and Applied Sciences is offering Four Year Undergraduate Degree programme B.Sc. (Hons. / Hons. with Research) Chemistry with Multiple Entry-Multiple Exit option from the academic session 2023-24. Through multiple entry/exit option, students will enter and exit the programme at various stages. This course emphasized hands on practice, innovative thought process and project-based learning.

- **Aims of B.Sc. (Hons. / Hons. with Research) Chemistry Programme**

The aims of the B.Sc. (Hons. / Hons. with Research) Chemistry programme, in accordance with the National Education Policy (NEP), are multifaceted and comprehensive. The programme aims to cultivate a strong foundation in chemistry principles and foster a deep understanding of the subject. It seeks to promote critical thinking, analytical skills, and problem-solving abilities among students, enabling them to address real-world challenges effectively. The B.Sc. (Hons. / Hons. with Research) Chemistry programme also encourages research-oriented thinking and provides opportunities for students to engage in scientific inquiry and exploration. By emphasizing hands-on laboratory work and practical applications, the programme aims to equip students with the necessary skills for conducting experiments and analysing data. Moreover, the programme seeks to foster an interdisciplinary approach, enabling students to connect chemistry with other scientific disciplines and societal issues. Overall, the B.Sc. (Hons. / Hons. with Research) Chemistry programme aspires to produce well-rounded graduates with a passion for learning and a strong foundation in chemistry, ready to make significant contributions to the scientific community and society at large.

- **Programme Educational Objectives (PEOs)**

These are deferred outcomes measured a few years after completion of the programme, where:

PEO 1: Graduates will become globally competent chemistry professionals, ready for careers in government, industry, and research sectors, and equipped with skills for entrepreneurial initiatives in multidisciplinary fields.

PEO 2: Graduates will demonstrate strong technical knowledge in chemistry, utilizing critical and innovative thinking to solve complex scientific and technological challenges.

PEO 3: Graduates will act as ethical professionals, capable of leading and collaborating effectively within teams, contributing to their growth and the success of their organizations.

PEO 4: Graduates will engage in lifelong learning, continuously developing their expertise to make meaningful contributions to society and the field of chemistry.

PEO 5: Graduates will be well-prepared to advance to higher education and research opportunities in chemistry and related disciplines.

- **Programme Outcomes (POs)**

At the time of graduation, students of undergraduate degree programme will be able:

PO1: To apply chemistry principles and analytical techniques to solve real-world problems related to chemistry.

PO2: To develop strong critical thinking skills to analyse and evaluate scientific evidence and methods in chemistry research and applications.

PO3: To promote teamwork and collaborative learning for interdisciplinary research projects.

PO4: To build strong interpersonal and leadership abilities to collaborate effectively in diverse professional environments.

PO5: To communicate scientific ideas and research findings clearly to scientific and general audiences.

PO6: To learn the ability to work independently or in team and stay updated with scientific advancements.

PO7: To acquire a strong commitment to high ethical standards, responsible research, and professionalism in academic and industry settings.

PO8: To demonstrate environmental and social consciousness by integrating sustainable practices and responsible decision-making into scientific work.

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:

PSO1: Understanding fundamental concepts, reactions, principles, and theories in organic, inorganic, physical, and analytical chemistry.

PSO2: Analyzing experimental data, chemical reactions, issues, and problems related to chemistry.

PSO3: Evaluating the validity and reliability of experimental results in chemistry.

PSO4: Applying chemistry principles and equations to solve problems, design experiments, and conduct research in various subfields of chemistry.

PSO5: Observing existing experimental methods by integrating new techniques and skills to improve the accuracy and efficiency of chemical research.

PSO6: Exhibiting coordinated manual skills in conducting chemistry experiments, ensuring safe and efficient handling of chemical, tools, and equipment while following detailed procedural steps.

- **Career Avenues**

- Research Scientist
- Academic Researcher
- Pharmaceutical Industry
- Chemical Analyst
- Science Communication
- Consulting
- Product Development
- Health and Safety Officer
- Materials Scientist
- Environmental Scientist
- Forensic Scientist
- Quality Control Specialist
- Government Agencies
- Industrial Research
- Entrepreneurship

These career avenues highlight the versatility and breadth of opportunities available to graduates with a B.Sc. in Chemistry and a research focus. Tailoring your skills and interests to these options can lead to a fulfilling and impactful career.

Graduates can pursue above careers, or continue with higher education (MSc, PhD) leading to academic or specialized roles in chemistry. Opportunities also exist in sectors like govt. jobs, defence services, data science, finance, and competitive examinations.

- **Duration**

The duration of this programme is four years (eight semesters) with multiple entry/exit options.

- **Eligibility Criteria for Award of Degree**

Name of Degree	Credits requirement	Completion Year
UG Certificate Chemistry	47	First Year
UG Diploma Chemistry	104	Second Year
B.Sc. Chemistry	148	Third Year
B.Sc. (Hons.) in Chemistry	176	Fourth Year
B.Sc. (Hons. with Research) in Chemistry	176	Fourth Year (Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level)

12.3 About the Programme: Bachelor of Science (Honours / Honours with Research) Mathematics

The B.Sc. (Hons. / Hons. with Research) Mathematics programme is an undergraduate academic course designed to provide students with a strong and versatile foundation in mathematics while offering a

complementary focus in Data Science. This rigorous and dynamic curriculum covers essential areas of pure and applied mathematics, including algebra, calculus, statistics, analysis, and more.

Students will also explore foundational Data Science as well as AI/ML concepts through minor papers that cover topics such as data analytics using SQL, R programming, machine learning, and Data driven applications. This interdisciplinary approach equips students with the mathematical tools and data-driven skills essential for solving complex problems in today's data-centric world.

Throughout the programme, students will develop critical thinking, analytical abilities, and problem-solving skills, preparing them for a wide range of career opportunities in academia, research, technology, finance, and industries where mathematics and data science converge.

This programme is ideal for those looking to pursue advanced research in mathematics while acquiring the practical skills needed to navigate the evolving landscape of data science.

- **Nature of B.Sc. (Hons. / Hons. with Research) Mathematics Programme**

Taking the NEP-2020 as an opportunity to review our existing academic programmes and redesign them for a more holistic, multidisciplinary and inclusive education, SBAS, K.R. Mangalam University is transforming its academic structure in a phased manner. School of Basic and Applied Sciences is offering Four Year Undergraduate Degree programme B.Sc. (Hons. / Hons. with Research) Mathematics with Multiple Entry-Multiple Exit option from the academic session 2023-24. Through multiple entry/exit option, students will be able to enter and exit the programme at various stages. This course emphasized hands on practice, innovative thought process and project-based learning.

- **Aims of B.Sc. (Hons. / Hons. with Research) Mathematics Programme**

The aims of the B.Sc. (Hons. / Hons. with Research) Mathematics programme, in accordance with the National Education Policy (NEP), are multifaceted and comprehensive. The programme aims to cultivate a strong foundation in Mathematics principles and foster a deep understanding of the subject. It seeks to promote critical thinking, analytical skills, and problem-solving abilities among students, enabling them to address real-world challenges effectively. The B.Sc. (Hons. / Hons. with Research) Mathematics programme also encourages research-oriented thinking and provides opportunities for students to engage in scientific inquiry and exploration. By emphasizing hands-on laboratory work and practical applications, the programme aims to equip students with the necessary skills for conducting experiments and analysing data. Moreover, the programme seeks to foster an interdisciplinary approach, enabling students to connect Mathematics with other scientific disciplines and societal issues. Overall, the B.Sc. (Hons. / Hons. with Research) Mathematics programme aspires to produce well-rounded graduates with a passion for learning and a strong foundation in Mathematics, ready to make significant contributions to the scientific community and society at large.

- **Programme Educational Objectives (PEOs)**

These are deferred outcomes measured a few years after completion of the programme, where:

PEO 1: Graduates will develop a strong foundation in mathematical principles, empowering them to excel in careers across academia, government, industry, and research, and to respond to evolving challenges in mathematics and interdisciplinary fields.

PEO 2: Graduates will commit to continuous learning and self-improvement, adapting their knowledge and skills to keep pace with advancements in mathematics and to make meaningful contributions to society.

PEO 3: Graduates will integrate ethical practices, human values, and a sense of responsibility toward environmental sustainability in their professional and personal lives, fostering a positive societal impact.

PEO 4: Graduates will be equipped with problem-solving and critical thinking skills in mathematical modelling, programming, and data analysis, enhancing their employability in diverse sectors.

PEO 5: Graduates will be prepared to pursue advanced studies and research in mathematics and related fields, contributing to the development of new mathematical knowledge and applications.

- **Programme Outcomes (POs)**

At the time of graduation, students of undergraduate degree programme will be able:

PO1: To understand the impact of mathematical research on the environment and society and show a commitment by using sustainable and ethical practices in work.

PO2: To apply mathematical techniques, modern tools, software and programming languages to identify and solve complex mathematical problems.

PO3: To analyze and evaluate mathematical arguments and solutions with a keen, logical approach.

PO4: To use mathematical knowledge in research that connects with other fields like physics, computer science, engineering, economics, and social sciences

PO5: To clearly present and explain mathematical concepts and research findings to both specialized and general audiences.

PO6: To collaborate effectively with peers and professionals, contributing positively to team settings and academic environments.

PO7: To understand and follow ethical standards in research and practice, ensuring integrity and social responsibility in the use of mathematical knowledge.

PO8: To stay dedicated to ongoing learning and keep up with new developments in mathematics and related fields. Programme Specific Outcomes (PSO)

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:
PSO1: Understanding fundamental concepts, theories, principles and their applications in different areas of mathematics.
PSO2: Applying mathematical methods and tools to model, simulate, and solve mathematical problems, enhancing research capabilities and practical applications.
PSO3: Analyzing complex mathematical problems and research data to determine patterns, relationships, and underlying principles.
PSO4: Evaluating mathematical models, algorithms and tools for solving mathematical problems.

PSO5: Operating mathematical software tools like Mathematica, MATLAB, and LaTeX to *organize, demonstrate,* and *present* mathematical solutions with accuracy, preparing them for research and industry applications that require computational expertise.

- **Career Avenues**

Graduates with a B.Sc. (Hons. / Hons. with Research) Mathematics have a diverse range of career avenues to explore. This combination of mathematics and data science skills equips them to thrive in various industries and professions where data-driven decision-making and analytical expertise are highly sought-after. Some potential career avenues for such graduates include:

1. **Data Analyst**: Data analysts are responsible for collecting, cleaning, and analyzing data to extract valuable insights that inform business decisions and strategies.
2. **Data Scientist**: Data scientists apply mathematical and statistical techniques to large datasets to develop predictive models and make data-driven recommendations.
3. **Business Analyst:** Business analysts use data analysis to identify trends, opportunities, and potential areas for improvement within organizations.
4. **Financial Analyst**: Financial analysts apply mathematical and statistical techniques to analyze financial data, assess investment opportunities, and make informed financial decisions.
5. **Market Research Analyst**: Market research analysts gather and analyze data to help companies understand market trends, consumer preferences, and competitive landscapes.
6. **Operations Research Analyst**: Operations research analysts use mathematical modelling and optimization techniques to improve operational efficiency in various industries.
7. **Actuarial Analyst**: Actuarial analysts assess risk and uncertainty in insurance and finance industries, using mathematical and statistical methods to estimate future events' probabilities.
8. **Quantitative Analyst**: Quantitative analysts, or quants, develop and implement mathematical models for financial and investment strategies.
9. **Data Engineer**: Data engineers design, build, and maintain data infrastructure and systems for efficient data processing and storage.
10. **Research Scientist**: Graduates can pursue research roles in academia, government, or private organizations, contributing to the advancement of mathematical and data science knowledge.
11. **Consultant**: Graduates can work as data science or analytics consultants, helping businesses and organizations optimize their operations and decision-making processes.
12. **Machine Learning Engineer**: Machine learning engineers develop and deploy machine learning models for various applications, such as natural language processing, image recognition, and recommendation systems.
13. **Healthcare Analyst**: In the healthcare sector, graduates can work on analyzing medical data, improving patient outcomes, and conducting research in medical data analysis.
14. **Academic and Teaching Careers**: Graduates can pursue further studies and research in mathematics or data science and build careers as educators and professors in academic institutions.
15. **Government and Public Sector**: Graduates may find opportunities in government agencies and public sectors, where data analysis and policy making go hand in hand.

- **Duration**

The duration of this programme is four years (eight semesters) with multiple entry/exit options.

- **Criteria for award of certificates and degree**

Name of Degree	Credits requirement	Completion Year
UG Certificate Mathematics	45	First Year
UG Diploma Mathematics	96/97	Second Year
B.Sc. Mathematics	133/135	Third Year
B.Sc. (Hons. / Hons. with Research) Mathematics	173	Fourth Year

12.4 About the Programme: Bachelor of Sciences (Honours / Honours with Research) Forensic Science

The B.Sc. (Hons. / Hons. with Research) Forensic Science is an undergraduate academic programme designed to provide students with a comprehensive foundation in the fascinating world of Forensic Science. This programme offers a rigorous and engaging curriculum that covers diverse areas of basic and applied sciences. Students in this programme will study fundamental principles of forensic science, engage in complex problem-solving, and enhance their analytical and critical thinking skills. Students in this programme will study fundamental principles of forensic science, engage in complex problem-solving, and enhance their analytical and critical thinking skills. Combining hands-on lab work with theoretical learning, they'll gain practical experience and a solid grasp of scientific research methods. The B.Sc. (Hons. / Hons. with Research) Forensic Science programme prepares students for exciting career opportunities in scientific research, technology, education, and various other fields that require a strong grasp of Forensic Science principles and applications.

- **Nature of B.Sc. (Hons. / Hons. with Research) Forensic Science Programme**

Taking the NEP-2020 as an opportunity to review our existing academic programmes and redesign them for a more holistic, multidisciplinary and inclusive education, SBAS, K.R. Mangalam University is transforming its academic structure in a phased manner. School of Basic and Applied Sciences is offering Four Year Undergraduate Degree programme B.Sc. (Hons. / Hons. with Research) Forensic Science with Multiple Entry-Multiple Exit option from the academic session 2023-24. Through multiple entry/exit option, students will be able to enter and exit the programme at various stages. This course emphasized hands on practice, innovative thought process and project-based learning.

- **Aims of B.Sc. (Hons. / Hons. with Research) Forensic Science Programme**

The aims of the B.Sc. (Hons. / Hons. with Research) Forensic Science programme, in accordance with the National Education Policy (NEP), are multifaceted and comprehensive. The programme aims to cultivate a strong foundation in Forensic Science principles and foster a deep understanding of the subject. It seeks to promote critical thinking, analytical skills, and problem-solving abilities among students, enabling them to address real-world challenges effectively. The B.Sc. (Hons. / Hons. with Research) Forensic Science programme also encourages research-oriented thinking and provides opportunities for students to engage in scientific inquiry and exploration. By emphasizing hands-on laboratory work and practical applications, the programme aims to equip students with the necessary skills for conducting experiments and analysing data. Moreover, the programme seeks to foster an interdisciplinary approach, enabling students to connect Forensic

Science with other scientific disciplines and societal issues. Overall, the B.Sc. (Hons. / Hons. with Research) Forensic Science programme aspires to produce well-rounded graduates with a passion for learning and a strong foundation in Forensic Science, ready to make significant contributions to the scientific community and society at large.

- **Programme Educational Objectives (PEOs)**

These are deferred outcomes measured a few years after completion of the programme, where:
PEO1: Graduates will evolve into proficient professionals, well-suited for roles in government, corporate, and research arenas, while also possessing the acumen for entrepreneurial pursuits in various interdisciplinary areas of forensic science.

PEO2: Graduates will demonstrate robust technical expertise to think critically and conduct thorough and accurate forensic analyses, interpreting results, and presenting findings effectively.
PEO3: Graduates will adhere to the ethical guidelines and legal frameworks governing the field, ensuring the responsible and unbiased application of forensic methodologies.
PEO4: Graduates will pursue lifelong learning and engage in advanced research, staying updated with emerging technologies and methodologies in forensic science.
PEO5: Graduates will demonstrate acumen for pursuing higher education and taking on roles in forensic laboratories, academic institutions, research or related industries, contributing to advancements in forensic science and public safety.

- **Programme Outcomes (POs)**

At the time of graduation, students of undergraduate degree programme will be able to:

PO1- To develop high order critical thinking skills to address and resolve real world forensic issues.
PO2- To develop problem solving skills and employ innovative approaches for effectively investigating and reconstructing crime scene, handling evidence, scientific instruments and legal reports.
PO3- To develop strong communication skills including reading, writing, listening, and speaking, to effectively express ideas and viewpoints.
PO4- To apply ethical principles and commit to professional ethics, responsibilities, and norms in academic and industrial environment.
PO5- To interact wisely and smartly within the society at personal and professional levels with a focus on achieving their target without affecting the societal harmony.
PO6- To practice and abide by processes required for a sustainable, healthy and safe environment and maintain contextual understanding of current environmental issues.
PO7- To foster self-confidence, leadership and collaborative skills to navigate between multicultural and multidisciplinary environments.

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:
PSO 1: Understanding basic principles, concepts, techniques and theories in forensic science to build a strong foundational knowledge.
PSO 2: Applying appropriate forensic methodologies and techniques to analyze physical, biological, chemical and digital evidence in real-life crime scenarios and laboratory settings**.**

PSO 3: Analyzing complex civil and criminal cases to develop critical thinking and problem-solving skills, enabling the formation of well-informed conclusions while upholding ethical standards and legal compliance.
PSO 4: Evaluating the validity and efficacy of various forensic approaches and modify them to enhance the accuracy and reliability of forensic analyses.
PSO5: Observe and apply spatial awareness to reconstruct crime scenes, using technical skills to accurately position evidence and illustrate potential event sequences effectively.
PSO 6: Creating innovative strategies to address and tackle complex challenges during forensic investigations and provide expert testimony in court.

- **Career Avenues**

Graduates can pursue careers in research and development (R&D) in industries, work as research scientists or assistants in academic and research institutions, or continue with higher education (M.Sc., PhD) leading to academic or specialized roles in Forensic Science. Opportunities also exist in sectors like govt. jobs, defence services, data science, finance, and competitive examinations.

- **Duration**

The duration of this programme is four years (eight semesters) with multiple entry/exit options.

- **Eligibility Criteria for Award of Degree**

Name of Degree	**Credit Requirement**	**Completion Year**
UG Certificate Forensic Science	43	First Year
UG Diploma Forensic Science	93	Second Year
B.Sc. Forensic Science	132	Third Year
B.Sc. (Hons. / Hons. With Research) Forensic Science	176	Fourth Year (Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level)

12.5 About the Programme: Master of Science Forensic Science

The Master of Science in Forensic Science (M.Sc. Forensic Science) is a postgraduate academic programme designed to provide students with a comprehensive foundation in the fascinating world of Forensic Science. This programme offers a rigorous and engaging curriculum that covers diverse areas such as Forensic Serology, Forensic Chemistry, Questioned Documents Examination, Fingerprint Examination, and more. Students enrolled in this programme will explore the fundamental principles that govern the universe, delve into complex problem-solving, and develop strong analytical and critical thinking skills. Students will gain practical experience and a deep understanding of scientific research methodologies through hands-on laboratory work. The M.Sc. Forensic Science programme prepares students for exciting career opportunities in scientific research, technology, education, and various other fields that require a strong grasp of Forensic Science principles and applications.

- **Programme Educational Objectives (PEOs*)***

These are deferred outcomes measured a few years after completion of the programme, where:

PEO 1: Graduates will become proficient forensic science professionals, capable of working in various sectors such as law enforcement, legal consultancy, corporate security, and research institutions, while also possessing the skills to pursue entrepreneurial opportunities in forensic technology.

PEO 2: Graduates will demonstrate a strong foundation in forensic science principles and practices, enabling them to critically analyze evidence and apply innovative problem-solving skills to address complex investigative challenges.

PEO 3: Graduates will uphold ethical standards in their professional practice, collaborating effectively in multidisciplinary teams to ensure justice and integrity in forensic investigations while contributing to the advancement of the field.

PEO 4: Graduates will commit to lifelong learning and continuous professional development, staying abreast with advancements in forensic science and applying their knowledge to enhance public safety and contribute positively to society.

PEO 5: Graduates will be well-prepared to pursue advanced studies and research opportunities in forensic science and related fields, furthering their expertise and contributing to the evolution of forensic methodologies.

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:

PSO1: Understanding and mastering advanced forensic techniques across multiple specializations, by utilizing modern instrumentation and methodologies to solve complex forensic cases.
PSO2: Applying interdisciplinary knowledge from various fields to enhance forensic investigations and comprehend solutions to real world forensic issues.
PSO3: Analyzing and interpreting diverse types of forensic evidence, including physical, biological, chemical, and digital evidence, utilizing scientifically validated techniques to support investigations and legal proceedings.
PSO4: Evaluating the efficacy of legal framework and ethical standards governing the use of forensic evidence in courts with clarity and professionalism.
PSO5: Observing and handling forensic evidence meticulously, applying technical skills to package and preserve evidence accurately, ensuring minimal contamination and maximum integrity.
PSO 5: Creating pioneering strategies to confront and resolve intricate challenges in forensic investigations, while delivering authoritative expert testimony in court.
PSO 6: Conducting independent research to develop innovative forensic solutions, contribute to scientific advancements, and address emerging challenges in criminal investigations.

- **Career Avenues**

Opportunities exist in academics, forensic science laboratories and administration besides all the opportunities applicable to any other graduate like UPSC examinations, defence services and other govt. jobs. After completion of master's and clearing UGC NET/JRF exam one can pursue career in academics and research organizations as Assistant Professor and Research Associate respectively.

- **Duration**

We have designed a flexible CBCS, LOCF, multidisciplinary approach for the duration of 2024-2026. The minimum period required for M.Sc. degree in forensic science is two years.

- **Eligibility Criteria**

Bachelor's degree in science / forensic science/ medicine / engineering / pharmacy/Dentistry/Ayush with at least 55% for General/OBC/EWS category candidates and 50% or equivalent for SC/ST and PwD category candidates.

- **Eligibility Criteria for Award of Degree**

Name of Degree	Credits requirement	Completion Year
PG Diploma in Forensic Science	42	First Year
M.Sc. Forensic Science	82	Second Year

12.6 About the Programme: B.Sc.-M.Sc. (Integrated) Forensic Science

The B.Sc.-M.Sc. (Integrated) Forensic Science is a 5-year academic programme designed to provide students with a comprehensive foundation and advanced studies in the fascinating world of Forensic Science. This programme offers a rigorous and engaging curriculum that covers diverse areas of basic and applied sciences. Students in this programme will study fundamental principles of forensic science, engage in complex problem-solving, and enhance their analytical and critical thinking skills. Students in this programme will study fundamental and advanced principles of forensic science, engage in complex problem-solving, and enhance their analytical and critical thinking skills. Combining hands-on lab work with theoretical learning, they'll gain practical experience and a solid grasp of scientific research methods. The B.Sc.-M.Sc. (Integrated) Forensic Science programme prepares students for exciting career opportunities in scientific research, technology, education, and various other fields that require a strong grasp of Forensic Science principles and applications.

- **Nature of B.Sc.-M.Sc. (Integrated) Forensic Science Programme**

Taking the NEP-2020 as an opportunity to review our existing academic programmes and redesign them for a more holistic, multidisciplinary and inclusive education, SBAS, K.R. Mangalam University is transforming its academic structure in a phased manner. School of Basic and Applied Sciences is offering Five Year Undergraduate Degree programme B.Sc.-M.Sc. (Integrated) Forensic Science with Multiple Entry- Multiple Exit option from the academic session 2023-24. Through multiple entry/exit option, students will be able to enter and exit the programme at various stages. This course emphasized hands on practice, innovative thought process and project-based learning.

- **Aims of B.Sc.-M.Sc. (Integrated) Forensic Science Programme**

The aims of the B.Sc.-M.Sc. (Integrated) Forensic Science programme, in accordance with the National Education Policy (NEP), are multifaceted and comprehensive. The programme aims to cultivate a strong foundation in Forensic Science principles and foster a deep understanding of the subject. It seeks to promote critical thinking, analytical skills, and problem-solving abilities among students, enabling them to address real-world challenges effectively. The B.Sc. (Hons. / Hons. with Research) Forensic Science programme also encourages research-oriented thinking and provides opportunities for students to engage in scientific inquiry

and exploration. By emphasizing hands-on laboratory work and practical applications, the programme aims to equip students with the necessary skills for conducting experiments and analysing data. Moreover, the programme seeks to foster an interdisciplinary approach, enabling students to connect Forensic Science with other scientific disciplines and societal issues. Overall, the B.Sc.-M.Sc. (Integrated) Forensic Science programme aspires to produce well-rounded graduates with a passion for learning and a strong foundation in Forensic Science, ready to make significant contributions to the scientific community and society at large.

- **Programme Educational Objectives (PEOs*)***

These are deferred outcomes measured a few years after completion of the programme, where:

PEO1: Graduates will evolve into proficient professionals, well-suited for roles in government, corporate, and research arenas, while also possessing the acumen for entrepreneurial pursuits in various interdisciplinary areas of forensic science.

PEO2: Graduates will demonstrate robust technical expertise to think critically and conduct thorough and accurate forensic analyses, interpreting results, and presenting findings effectively.

PEO3: Graduates will adhere to the ethical guidelines and legal frameworks governing the field, ensuring the responsible and unbiased application of forensic methodologies.

PEO4: Graduates will pursue lifelong learning and engage in advanced research, staying updated with emerging technologies and methodologies in forensic science.

PEO5: Graduates will demonstrate acumen for pursuing higher education and taking on roles in forensic laboratories, academic institutions, research or related industries, contributing to advancements in forensic science and public safety.

- **Programme Outcomes (POs)**

At the time of graduation, students of undergraduate degree programme will be able to:

PO1- Critical Thinking: Develop high order critical thinking skills to address and resolve real world forensic issues.

PO2- Problem Solving: Develop problem solving skills and employ innovative approaches for effectively investigating and reconstructing crime scene, handling evidence, scientific instruments and legal reports.

PO3- Effective communication: Develop strong communication skills including reading, writing, listening, and speaking, to effectively express ideas and viewpoints.

PO4- Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms in academic and industrial environment.

PO5- Interpersonal skills: Interact wisely and smartly within the society at personal and professional levels with a focus on achieving their target without affecting the societal harmony.

PO6- Environment and Sustainability: Practice and abide by processes required for a sustainable, healthy and safe environment and maintain contextual understanding of current environmental issues.

PO7- Team building and Leadership: Foster self-confidence, leadership and collaborative skills to navigate between multicultural and multidisciplinary environments.

- **Programme Specific Outcomes (PSOs)**

At the time of graduation, students of undergraduate degree programme will be:

PSO1: Understanding basic principles, concepts, techniques and theories in forensic science to build a strong foundational knowledge.

PSO2: Applying appropriate forensic methodologies and techniques to analyze physical, biological, chemical and digital evidence in real-life crime scenarios and laboratory settings.

PSO3: Analyzing complex civil and criminal cases to develop critical thinking and problem-solving skills, enabling the formation of well-informed conclusions while upholding ethical standards and legal compliance.

PSO4: Evaluating the validity and efficacy of various forensic approaches and modify them to enhance the accuracy and reliability of forensic analyses.

PSO5: Observe and apply spatial awareness to reconstruct crime scenes, using technical skills to accurately position evidence and illustrate potential event sequences effectively.

PSO6: Creating innovative strategies to address and tackle complex challenges during forensic investigations and provide expert testimony in court.

- **Career Avenues**

Graduates can pursue careers in research and development (R&D) in industries, work as research scientists or assistants in academic and research institutions or continue with higher education (PhD) leading to academic or specialized roles in Forensic Science. Opportunities also exist in sectors like govt. jobs, defence services, data science, finance, and competitive examinations.

- **Duration**

The duration of this programme is five years (ten semesters) with multiple entry/exit options.

- **Eligibility Criteria for Award of Degree**

Name of Degree	Credits requirement	Completion Year
UG Certificate Forensic Science-	43 Credits	First Year
UG Diploma Forensic Science-	93 Credits	Second Year
B.Sc. Forensic Science-	132 Credits	Third Year
B.Sc. (Hons.) Forensic Science & PG Diploma in Forensic Science-	176 Credits	Fourth Year
Integrated Degree Programme (B.Sc. + M.Sc.) Forensic Science	216 Credits	Fifth Year

12.7 Details of minor stream offered by the school

SBAS offers a range of four minor courses to students, with detailed information provided below.

Minor- Nanoscience

Semester		Course Name	Credit
I	Minor1	Study Of Materials	4
II	Minor2	Elements Of Nanoscience and Nanomaterials	4
III	Minor 3	Nanostructured Materials	4
IV	Minor 4	Crystallography	4
IV	Minor4 (Lab)	Crystallography Lab	2
V	Minor5	Synthesis Of Nanomaterials-I	4
VI	Minor6	Synthesis Of Nanomaterials-II	4
VI	Minor6 (Lab)	Synthesis Of Nanomaterials-Lab	2
VII	Minor7	Characterization Techniques of Nanomaterials	4

Minor- Environmental Science

Semester		Course Name	Credit
I	Minor1	Earth And Earth Surface Processes	4
II	Minor2	Hydrology And Hydrogeology	4
III	Minor 3	Natural Resources Management and Sustainability	4
IV	Minor 4	Natural And Anthropogenic Hazards	4

V	Minor5	Environmental Legislation Policies and ESG's	4
VI	Minor6	Waste Management	4
VII	Minor7	Environmental Impact Assessment and Risk Assessment	4
VIII	Minor8	SDG's And Climate Change	4

Minor- Data Science

Semester		Course Name	Credit
I	Minor1	Data Analytics Using SQL	4
II	Minor2	Data Analytics Using R	4
III	Minor 3	Python For Data Science	4
IV	Minor 4	Data Preprocessing and Visualization Using Python	4
V	Minor5	Time Series Analysis & Forecasting Using Python	4
VI	Minor6	Fundamental Of Machine Learning	4
VII	Minor7	Data Driven Applications	4
VIII	Minor8	Project And Case Study	4

Minor- Artificial Intelligence & Machine Learning

Semester		Course Name	Credit
I	Minor1	Data Analytics using SQL	4
II	Minor2	Data Analytics using R	4
III	Minor 3	Python for Data Science	4
IV	Minor 4	Data Structures and Algorithms	4
V	Minor5	Fundamentals of Artificial Intelligence	4
VI	Minor6	Fundamental of Machine Learning	4
VII	Minor7	Neural Network and Deep Learning	4
VII	Minor8	Natural Language Processing	4

Semester	**Minor**	**Name**	**Credits**
I	Minor 1	Inorganic and Organic chemistry-I	3

	Minor Practical 1	Practical-Chemistry I	1
II	Minor 2	Chemistry of elements	3
	Minor Practical 2	Practical-Chemistry II	1
III	Minor 3	Physical chemistry	3
	Minor Practical 3	Practical-Chemistry III	1
IV	Minor 4	Analytical chemistry-I	3
	Minor Practical 4	Practical-Chemistry IV	1
V	Minor 5	Inorganic and Organic chemistry-II	3
	Minor Practical 5	Practical-Chemistry V	1
VI	Minor 6	Physical and Organic chemistry	3
	Minor Practical 6	Practical-Chemistry VI	1
VII	Minor 7	Inorganic and Physical chemistry	3
	Minor Practical 7	Practical-Chemistry VII	1
VIII	Minor 8	Analytical chemistry-II	3
	Minor Practical 8	Practical-Chemistry VIII	1

13. Internships and Placement (Training, apprenticeship, projects)

Undergraduate students at the School of Basic and Applied Sciences (SBAS) are required to complete one month summer internship during the first and second years of their degree programme, each carrying a weightage of 2 credits. This mandatory component is designed to provide hands-on experience and practical exposure, which are essential for obtaining their degree. Many students undertake internships at prestigious institutions with which SBAS has signed Memorandums of Understanding (MoUs), ensuring access to quality learning environments. Additionally, with the guidance and support of faculty members, students secure internships at renowned research institutes and industries, further enriching their academic and professional experiences. These internships enable students to bridge the gap between theoretical knowledge and real-world applications, preparing them for future challenges in academia and the workplace.

B.Sc. (Hons.) Physics 2nd year students completing one month Internship at Deshbandhu College, New Delhi under MoU.

Graduates from the School of Basic and Applied Sciences (SBAS) at K.R. Mangalam University have excelled in diverse roles across various industries, showcasing the quality of education and training provided by the institution.

Prabhat Kumar Pal (B.Sc. Hons. Physics, 2020) is serving as an Executive Telesupply at Spinny, Gurugram.

Lavanya Joshi (B.Sc. Hons. Physics, 2018) has established herself as a Senior Marketing Manager at Reports and Insights, Noida.

Deepak (B.Sc. Hons. Mathematics, 2018) works as a Junior Analyst at GFK Mode Pvt. Ltd, Gurugram.

Ankita Karir (B.Sc. Hons. Chemistry, 2020) is contributing as a Research Analyst at TechSci Research, Noida.

Aquib Aamir (B.Sc. Hons. Physics, 2017) is imparting knowledge as a Physics Faculty at Vedantu Innovations, Pune.

Priya Yadav (B.Sc. Hons. Chemistry, 2018; M.Sc. Chemistry, 2020) is employed as a Compliance Engineer at Markek International, Gurugram.

These alumni exemplify the diverse career opportunities available to SBAS graduates, highlighting their preparedness for professional and academic pursuits.

14. Experiential Calendar

S.No	Name of the event	Date of the Event (DD-MM-YYYY)	SDG Goals	SDG Outcomes	Organizers (Faculty In-charge)	Objective	Outcome
1	Industrial Visit	09-Sep-24	SDG- 4 and 17	Gaining insights into educational technologies and methodologies that enhance learning and educational outreach.	Dr Suman Srivastva, Dr Sujata and Dr. Pratibha	To bridge the gap between theoretical knowledge and practical application, enhancing students' understanding of scientific concepts.	Gaining hands-on experience with scientific instrumentation and methodologies.
2	Industrial Visit	21-Oct-24	SDG- 4 and 17	Gaining insights into educational technologies and methodologies that enhance learning and educational outreach. And	Dr Rishi Ranjan, Dr Aina Gupta andDr. Deepak Yadav	To bridge the gap between theoretical knowledge and practical application, enhancing students' understanding of scientific concepts.	Gaining hands-on experience with scientific instrumentation and methodologies.
3	Industrial Visit (FRI/ Wild Life, Dehradun)	11-Nov-24	SDG- 4 and 17	Gaining insights into educational technologies and methodologies that enhance learning and educational outreach. And	Dr Mandeep Kaur and Mr Suraj Yadav	To bridge the gap between theoretical knowledge and practical application, enhancing students' understanding of scientific concepts.	Gaining hands-on experience with scientific instrumentation and methodologies.
4	Seminar on 'Unlocking Innovation : Intellectual Property Rights and Strategic Management with KEIC'	13-Sep-24	SDG 9 and 4.4	Learning how patents, trademarks, and copyrights can protect scientific discoveries and innovations	Dr Ruby Jindal, Dr Pardeep and Dr. Mahobbat Ali	To educate participants about the importance of intellectual property rights (IPR), including patents, copyrights, trademarks, and trade secrets.	Participants gain a comprehensive understanding of different types of IP rights and their significance in various sectors.

5	Exploring Causes and Management of Malnutrition in Pediatric Populations: Case Studies in nearby village	September - November 2024	SDG 2 and 3	Students will learn about the short-term and long-term effects of malnutrition on physical and cognitive development, productivity, and overall health.	Dr Abdal, Dr Mamta Raj, Dr Vicky Kapoor and Ms Sapna	To assess the nutritional status of different population groups (children, pregnant women, elderly) in the village	Obtain a comprehensive understanding of the causes, types, and severity of malnutrition prevalent in the village.
6	Research Paper/ Project/ Field Work under New MoU(Activity -1)	Nov-24	SDG- 4, 9 and 17	Enhancing the research capabilities of participating institutions and students, fostering innovation and technological advancements.	Mathematics /Forensic Science (two activities - Student Exchange/ Research Publication /Internship)	To enhance the research capabilities, analytical skills, and professional development of the students	Development of research skills, methodologies, and interdisciplinary collaboration capabilities among students
7	Research Paper/ Project/ Field Work under MoUunder New MoU(Activity -2)	Oct-24	SDG- 4, 9 and 17	Enhancing the research capabilities of participating institutions and students, fostering innovation and technological advancements.	Mathematics /Forensic Science (two activities - Student Exchange/ Research Publication /Internship)	To enhance the research capabilities, analytical skills, and professional development of the students	Development of research skills, methodologies, and interdisciplinary collaboration capabilities among students
8	Workshop on Soft skill: Strategies for Success	23-Sep-24	SDG 4.4	Students will develop effective verbal and written communication skills, essential for academic and professional success.	Dr Pooja Vats and Dr Ritika Khattri	To raise awareness about the significance of soft skills such as communication, teamwork, adaptability, and leadership in career development.	Participants gain insights and strategies for leveraging soft skills to advance their careers and achieve professional goals.
9	Seminar on 'Insights through Analysis: Exploring Modern Analytical Techniques'	23-Oct-24	SDG 4 and 9	Promoting innovation and industrial development through the application of advanced analytical techniques in various fields.	Ms Ruddhidha, Mr Nitin Tyagi and Ms Kritika	To provide hands-on training sessions and workshops to develop participants' analytical skills.	Participants will learn about new analytical technqiues for their research and innovative projects.

10	Fostering Future Minds: Alumni Perspectives on the Evolving Role of Science in Education	28-Oct-24	SDG 4	Enhancing the quality and relevance of science education through alumni insights, promoting lifelong learning, and preparing students for future challenges.	Dr Rajni Gautam and Dr Mina Kumari	To engage the participants to gather perspectives from alumni on how their science education has influenced their careers and personal development.	Participants will gain a clearer understanding of the skills and knowledge needed for their future careers.
11	Conference	December 2024	SDG- 4	Enhancing the quality and relevance of science education through alumni insights, promoting lifelong learning, and preparing students for future challenges.	Conference on Quality Education/ Science with Shivaji College	To highlight best practices and innovative approaches to teaching and learning.	Potential publication of conference proceedings, and journal articles
12	Seminar on Code of Conduct for School Students	Induction Week	SDG 4	Encouraging students to maintain a positive and respectful learning environment contributes to the overall quality of education.	Dr. Seema Raj	To foster a culture of mutual respect, responsibility, and cooperation among students.	A more positive and inclusive atmosphere will be developed among students
13	Seminar on Professional ethics for students	Induction Week	SDG 4	Promoting professional ethics enhances the quality of education by fostering an environment of integrity, respect, and accountability	Dr. Pawan Kumar	To highlight the importance of ethical behavior in educational institute which is necessary for the development of future professional environments.	The sense of accountability and responsibility among students and teachers will be developed
14	Seminar on Professional ethics for teachers	06-Nov-24	SDG 4	Promoting professional ethics enhances the quality of education by fostering an environment of integrity, respect, and accountability	Dr. Yogendra Kumar Rajoria and Dr Chandra Mohan	To highlight the importance of ethical behavior in educational institute which is necessary for the development of future professional environments.	The sense of accountability and responsibility among students and teachers will be developed

15. Testimonials (Outstanding students/Alumni/ Distinguished guests)

The alumni of the School of Basic and Applied Sciences (SBAS) at K.R. Mangalam University, numbering 126 registered members, have demonstrated exceptional achievements in academics and research. Several alumni are pursuing advanced degrees at prestigious institutions worldwide.

Manoj Kumar (B.Sc. Hons. Chemistry, 2018; M.Sc. Chemistry, 2020) is currently pursuing a Ph.D. at Ruhr University Bochum, Germany.

Divya Singla (B.Sc. Hons. Chemistry, 2018), an IIT JAM 2018 qualifier, completed her M.Sc. at IIT Delhi (2020) and is now pursuing a Ph.D. at the University of Connecticut, USA.

Agnivesh Tiwari (B.Sc. Hons. Mathematics, 2021) has already published three journal articles, secured one patent, and presented two conference papers under the guidance of Dr. Yogendra Kumar Rajoria.

Diksha Boken (B.Sc. Hons. Chemistry, 2020) is enrolled in the Master of Public Administration in Environmental Science and Policy programme at Columbia University, New York. These accomplishments reflect the strong academic foundation and research-oriented culture nurtured at SBAS, enabling alumni to excel in their chosen fields.

16. Contact Details

Dean: Prof. (Dr.) Meena Bhandari

Email Id: deansbas@krmangalam.edu.in, meena.bhandari@krmangalam.edu.in

M.No.: 9999621544

17. Appendices

APPENDIX-I

Standard Operating Procedure (SOP) for Internship

All undergraduate students at the School of Basic and Applied Sciences must complete a summer internship as part of their curriculum to earn 2 credits for each internship. The internship should provide students with practical experience and exposure to real-world applications of their academic knowledge. The following guidelines outline the procedure, expectations, and requirements for the internship:

---

1. Eligibility

- All undergraduate students enrolled in the School of Basic and Applied Sciences in 4-year bachelor's degree programmeme are required to undertake an internship at the end of second semester and fourth semester after the end-term examination.
- Students enrolled in 3-year bachelor's degree programmeme will undertake one internship at the end of second semester after the end-term examination.
- The internship should be related to the student's field of study, including disciplines such as Physics, Chemistry, Mathematics, or Forensic Sciences.

2. Internship Duration

- The internship should last for a minimum of 4 to 6 weeks (approximately 120 to 150 hours) during the summer break.
- The total time commitment must meet the requirements to qualify for the allocation of 2 credits for each internship.

3. Internship Scope

- Internships can be carried out in various sectors, including:
    - Research institutions and laboratories.
    - Industries related to semiconductors, materials science, environmental science, data analysis, Forensic Sciences, etc.
    - Universities or academic institutions offering summer research/internship programmes.
    - Startups or established companies in relevant fields.
- The chosen internship must offer hands-on experience and align with the student's academic and career goals.

4. Selection Process

- Students may arrange internships through:
    - University-organized programmes or collaborations (MOUs with industries and institutions).
    - Direct applications to organizations.
    - Internship portals or professional networks.
- Before finalizing the internship, students must receive approval from their academic advisor/mentor to ensure the internship meets academic standards and aligns with the student's study area.

5. Learning Outcomes

- Students are expected to achieve the following outcomes:
    - Apply theoretical knowledge to practical scenarios.
    - Develop professional skills, such as communication, teamwork, and time management.
    - Gain an understanding of industry practices, research methodologies, or advanced laboratory techniques.
    - Enhance problem-solving and critical thinking skills in real-world applications.

6. Documentation and Evaluation

- **Internship Proposal**: Before starting the internship, students must submit a proposal including details of the organization, internship objectives, and duration for approval by the academic advisor/mentor.
- **Daily/Weekly Log**: Students must maintain a record of activities carried out during the internship, summarizing tasks and reflecting on learning.
- **Internship Report**: Upon completion, students must submit a detailed internship report that includes:
    - Description of the organization and work environment.
    - Summary of tasks and projects undertaken.
    - Learning experiences and skills acquired.
    - Challenges faced and how they were addressed.
    - Reflections on how the internship relates to their academic programme.
- **Supervisor Evaluation**: The internship supervisor at the host organization must provide a certificate to students on successful completion of the internship programme.

7. Credit Allocation

- Evaluation scheme for internship

Particular	Weightage
Internal Marks: - Internship completion certificate obtained from supervisor from host institute.	30 Marks
External Marks (Practical): - Presentation Report Writing Viva Voce	70 Marks 25 25 20

- Students must pass all evaluation components to receive the 2 credits.

8. Deadlines

- **Internship Proposal Submission**: At least two weeks before the commencement of the internship.
- **Final Report Submission**: Within two weeks after completing the internship.

9. Code of Conduct

- Students must adhere to the professional code of conduct during their internship, maintaining ethical behavior, punctuality, and a commitment to learning.

Any issues or disputes during the internship should be immediately reported to the academic advisor/mentor.

APPENDIX-II

Standard Operating Procedure (SOP) for Research Project / Dissertation

All undergraduate students at the School of Basic and Applied Sciences are required to complete a research project under the supervision of a faculty member in their final year. The project is a crucial component of the curriculum and provides students with the opportunity to apply their academic knowledge to real-world research problems. Successful completion of the research project will lead to the awarding of the required credits as per the course structure.

---

1. Eligibility

- All final-year undergraduate students are required to complete a research project in their chosen field of study.
- The project must be undertaken under the supervision of a faculty member from the School of Basic and Applied Sciences.

2. Project Duration

- The project is generally conducted over one semester of the final year, based on the course structure.
- Students are expected to dedicate a significant amount of time to the project to meet the required credits.

3. Project Scope

- The research project must be directly related to the student's field of study, which may include topics from Physics, Chemistry, Mathematics, Forensic Science, Materials Science, Environmental Science, or other applied sciences.
- Students are encouraged to work on current and relevant topics, including experimental, theoretical, computational, or applied research.
- Projects can involve individual or group work, as defined by the supervisor.

4. Project Selection

- **Supervisor Assignment**: Each student will be assigned or can select a faculty supervisor based on their area of interest and available projects.
- **Topic Approval**: Students must submit a research proposal outlining their project objectives, methodology, and timeline. The proposal must be approved by the faculty supervisor.
- The research project topic should align with the academic interests of both the student and the faculty supervisor and should be feasible within the given time frame and resources.

5. Learning Objectives

- The research project aims to achieve the following:
    - Develop research skills, including data collection, analysis, and interpretation.
    - Enhance problem-solving and critical thinking abilities.
    - Improve technical writing and presentation skills.
    - Foster innovation and creativity in scientific inquiry.
    - Promote collaboration and teamwork, where applicable.

6. Project Phases

- **Initial Proposal**: Students must develop a research proposal that defines the project's objectives, scope, and expected outcomes. This should be approved by the faculty supervisor.
- **Literature Review**: Students must conduct a comprehensive review of existing research related to their project topic and present the findings as part of their progress.
- **Data Collection and Analysis**: Depending on the nature of the project, students will gather data through experiments, simulations, or theoretical work and analyze the findings.
- **Drafting the Final Report**: The final report will include a detailed description of the research, methodology, results, and conclusions.

7. Documentation and Submission

- **Research Proposal**: Students are required to submit a research proposal that clearly defines the problem statement, research methodology, and expected outcomes. The proposal must be approved by the supervisor.
- **Progress Reports**: Students must submit periodic progress reports to their supervisor, summarizing the research activities, challenges encountered, and the next steps.
- **Final Project Report**: Upon completion of the project, students must submit a final report that includes:
    - Introduction and background of research.
    - Detailed methodology.
    - Data analysis, results, and discussion.
    - Conclusion and future scope of research.
    - References and bibliography.
- **Project Presentation**: Students will be required to present their research findings through a presentation to a panel of faculty members.

8. Evaluation Criteria

- The evaluation of the research project will be based on the following:

Particular	Weightage
Internal Marks (to be provided by supervisor): - (Punctuality, Performance, Work Ethics, Efforts and Research Output)	50 Marks
External Marks: - Presentation Report Writing Viva Voce	50 Marks 20 10 20

- Students must meet all evaluation criteria to successfully earn the credits assigned to the research project in their course structure.

9. Code of Conduct

- Students must adhere to the highest standards of academic integrity and ethics while conducting research.
- Any form of plagiarism, data manipulation, or misconduct will lead to disqualification from the project and disciplinary action.
- Regular communication with the supervisor is mandatory to ensure timely completion of the project.
- Students must respect deadlines and follow the guidelines provided by the school and supervisor.

10. Deadlines

- **Research Proposal Submission**: Within the first month of the final year or as directed by the department.
- **Progress Reports**: As specified by the supervisor, typically at key milestones of the project.
- **Final Report Submission**: At the end of the final semester or by the deadline set by the supervisor.
- **Presentation**: At the end of the semester, after end term examination.

APPENDIX-III

General Standard Operating Procedure (SOP) for All Labs

These Standard Operating Procedures (SOPs) provide guidelines for safe and efficient conduct in the Physics, Chemistry, and Forensic Science laboratories. All university students must adhere to these protocols to ensure safety, accuracy in experiments, and the responsible use of lab resources.

---

1. **Lab Attendance and Conduct**
    - Students must arrive on time and sign the attendance register before entering the lab.
    - Follow the instructions of the lab supervisor and respect the lab environment.
    - Avoid unnecessary movements or distractions; focus on your assigned tasks.
2. **Personal Protective Equipment (PPE)**
    - Lab coats, safety goggles, and gloves must be always worn, depending on the nature of the experiments.
    - Long hair should be tied back, and loose clothing or accessories should be secured.
    - Closed-toe shoes are mandatory in all lab environments.
3. **Preparation for Lab Sessions**
    - Read and understand the lab manual or experimental procedure prior to entering the lab.
    - Be aware of the potential hazards of materials and equipment you will use.
    - Students are required to maintain a lab notebook to record their procedures, observations, and results.
4. **Handling Equipment and Materials**
    - All equipment and materials should be handled with care, as instructed by the lab supervisor.
    - Do not use equipment without prior authorization from the instructor.
    - Report any malfunctioning equipment or hazards immediately.
5. **Chemical and Sample Handling**
    - All chemicals and samples must be properly labelled before use.
    - Never taste or directly smell chemicals; use wafting techniques when necessary.
    - Dispose of chemicals and samples according to the designated waste disposal procedures for each lab.
6. **Emergency Procedures**
    - In case of an accident, fire, or chemical spill, immediately notify the lab supervisor.

- Know the locations of safety equipment, such as fire extinguishers, safety showers, and first-aid kits.
- Emergency exits should be always kept clear.

7. **Cleaning and Storage**
   - All workstations should be cleaned after experiments, and all materials and equipment should be returned to their designated storage places.
   - Wash hands thoroughly after completing the lab work, even if gloves were worn.
   - Ensure proper disposal of waste and return all equipment to its original state.

APPENDIX-IV

SOP for Physics Laboratories

Physics labs involve the use of various instruments, sensitive equipment, and experiments related to mechanics, optics, electromagnetism, and modern physics. The following guidelines apply specifically to the physics lab environment:

1. **Equipment Calibration**
    - Before starting an experiment, ensure all instruments are calibrated and set to zero, if required.
    - Handle sensitive equipment like oscilloscopes, lasers, and spectrometers with care.
    - Always use the equipment as per the instructions provided by the supervisor or lab manual.
2. **Electrical Safety**
    - Ensure all electrical connections are properly insulated before switching on any equipment.
    - Never work with live circuits without supervision.
    - Turn off equipment immediately after use to avoid overheating or electrical hazards.
3. **Optical and Laser Safety**
    - When working with lasers, ensure that you are familiar with the laser safety guidelines.
    - Never look directly into a laser beam or its reflection.
    - Use appropriate filters and safety glasses when working with high-intensity light sources.
4. **Magnetic Fields**
    - Be cautious when working with strong magnetic fields; ensure that any metallic objects, including watches and electronic devices, are kept away.
    - Properly secure magnets to prevent sudden movements or accidental injuries.

APPENDIX-V

SOP for Chemistry Laboratories

Chemistry labs involve handling chemicals, reagents, and performing reactions that may present various risks. Special care is required to prevent accidents and ensure proper disposal of hazardous materials.

1. **Chemical Safety**
    - Always read the labels on chemical bottles before using them to confirm the correct substance is being used.
    - When diluting acids, always add acid to water, not water to acid, to avoid dangerous reactions.
    - Store volatile and flammable substances away from open flames and heat sources.
2. **Handling Glassware**
    - Inspect glassware for cracks or defects before use.
    - When heating substances in glass containers, ensure they are placed on heat-resistant surfaces and handled with tongs or protective equipment.
    - Never apply excessive force when inserting glass tubing into stoppers.
3. **Fume Hoods and Ventilation**
    - Conduct all reactions that produce fumes or volatile substances under a fume hood.
    - Ensure the ventilation system is working properly before starting experiments.
    - Never place your head inside the fume hood while working.
4. **Waste Disposal**
    - Separate chemical waste based on type (e.g., organic, inorganic, acids, bases).
    - Follow the lab-specific protocols for disposing of hazardous materials, ensuring they do not contaminate water or air sources.
    - Use designated waste containers for different types of chemicals.

APPENDIX-VI

SOP for Forensic Science Laboratories

Forensic science labs involve analysis of evidence, samples, and various materials in controlled environments. The following guidelines ensure accuracy, integrity, and safety in forensic investigations:

1. **Sample Handling**
    - Use sterile equipment and gloves when handling biological evidence to avoid contamination.
    - Keep samples isolated to prevent cross-contamination.
    - Use separate workstations for different types of evidence, such as blood samples, fingerprints, or fibers.
2. **Biological and Chemical Safety**
    - Handle biological samples with care, using appropriate PPE (e.g., gloves, masks) to avoid exposure to pathogens.
    - Dispose of biological waste in designated biohazard containers.
    - Follow chemical safety guidelines when working with reagents used in forensic analysis, such as DNA extraction chemicals.
3. **Instrumentation Use**
    - Proper training is required before using advanced forensic instruments such as GC-MS (Gas Chromatography-Mass Spectrometry), FTIR (Fourier Transform Infrared Spectroscopy), or DNA sequencers.
    - Maintain accurate calibration logs for all forensic instruments.
    - Keep instruments clean and follow specific cleaning protocols after each use to avoid cross-sample contamination.
4. **Documentation and Reporting**
    - Maintain accurate and detailed records of all observations, procedures, and results during forensic analysis.
    - Ensure the integrity of results by adhering to standard forensic protocols for reporting and documentation.
    - Prepare reports with attention to detail, ensuring the clarity and accuracy of the findings for legal purposes.

APPENDIX-VII

STANDARD OPERATING PROCEDURE (SOP) FOR ISSUING NOC TO STUDENTS

Objective: The objective of this SOP is to ensure a systematic and transparent process for issuing NOCs to students for job placements or training opportunities, thereby facilitating their professional development while maintaining academic standards and compliance.

1) **Request Submission:**

The following documents are to be submitted/ uploaded by the student for the requirement of NOC:

1.1) **Cover Letter**: Detailing how the internship/placement aligns with their academic programme and career objectives.

1.2) **Offer Letter:** An official document from the organization outlining the role, duration, and conditions.

1.3) **Internship/Placement Plan:** A document explaining the expected learning outcomes and how the student intends to balance their academic responsibilities.

The above documents are to be addressed to the concerned school dean/head.

2) **Approval Process:**

Document Verification and review by Dean/Head:

2.1) Dean/ Head verifies the authenticity of the request and the supporting documents provided by the student as per ***point no. 1.***

2.2) Dean is required to approve the request if the following parameters are met:

- **Relevance:** The internship/placement must be relevant to the student's academic requirements.
- **Educational Value:** There must be clear learning outcomes and professional development opportunities stated by the student in the cover letter.
- **Academic Commitment Management:** Student has clearly indicated how they will manage their coursework alongside the internship/placement.

The Dean/Head will approve the request after verifying the documents provided by the student.

Note: In case the Dean/Head rejects the request, he/she needs to give a valid reason, in writing for the same.

3) Issuance of NOC:

3.1) Upon approval, the CDC will issue the NOC, stating that the University has no objection to the student pursuing the job placement or training/internship opportunity. (Annexure 1)

4) Student Acknowledgment:

4.1) The NOC is handed over to the student, who acknowledges receipt.

5) Record Keeping:

5.1) Records of NOC copies issued are to be maintained by the CDC department and respective schools.

6) Follow-Up:

6.1) Throughout the duration of the job placement or training, the University may conduct periodic checks to ensure that the student is fulfilling their academic and other obligations.

6.2) Any issues or concerns that arise during this period are addressed promptly by the CDC/Dean/Head in coordination with the student and the employer or training organization.

7) Appeal in case the request is rejected:

7.1) If the decision of the Dean/Head is not acceptable to the student, he/she may request Dean Academics to review all documents and render a decision.

7.2) Students must file their appeal no later than 10 working days after the school's rejection date. If the student does not file a timely appeal, the decision of the Dean/Head will be final.

7.3) A student's appeal must be submitted in writing and include all the relevant documents mentioned in point no.1 along with the Dean/Head's reason for not approving the request.

7.4) Dean Academics will review the request along with all the submitted documents and may seek clarifications from the student and Dean/head to conclude the final decision.

7.5) The decision of the Academic Dean will be final and binding; there is no further appeal.

Appendix- VIII
NO-OBJECTION CERTIFICATE

This is to certify that _____, Roll. No. _____ is a Bonafide student of _____ at School of Basic and Applied Sciences, K.R. Mangalam University during the academic year _____. This certificate states that the University has no objections to the consideration of the application for Summer Internship (year)_____ at _____ during the summer vacation i.e. the period from _____. However, he/she will appear for the End Term Examination held at university campus.

Dr Meena Bhandari
Dean
School of Basic and Applied Sciences
K.R. Mangalam University

CC:
Dean Academics
Career Development Cell
Programme Coordinator
Mentor