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1. ABOUT THE SCHOOL OF BIO SCIENCES AND TECHNOLOGY (SBST):

School of Bio Sciences and Technology (SBST) offer programs in various disciplines of Modern Biology such as M.Sc in Applied Microbiology, Biotechnology, Biomedical Genetics (Genetic Counseling specialization). The School houses excellent infrastructure and well trained faculty members (115 nos). Most of them have pursued Post-Doctoral Fellowship from laboratories in developed countries. The competencies of the faculty in research are endorsed by the quality of research papers and obtaining research projects. There has been a constant inclination in the research publication in the recent years. From 2012 – 2017 faculty have published 1549 research papers in peer reviewed journals with the cumulative impact factor of 2377.

SBST has been dedicated to expanding and sharing knowledge, inspiring innovation, and preserving cultural and scientific information for future generations. We at SBST impart futuristic technical education and instill high patterns of discipline through our dedicated staff, who set global standards, making our students technologically superior and ethically strong, leading them to improve the quality of life of the human race.

1.1. Major Funding Projects:

Faculty has received funding from various National & International agencies. A total of 53 projects have been completed with a sum of 10 crores and 9 crores project is currently is pipeline. Apart from manuscripts and projects, SBST also have developed 20 products that are filed for patenting. The Memoranda of Understanding with various international universities and biotechnological industries is the major strength of this Institution. They provide for an exchange of students and faculty and encourage joint research projects for the mutual benefit of research institutions.

Many of the students, who pursue their research projects in foreign universities, bring high quality to their work and esteem to India. With steady steps, we continue our march forward.

1.2. Placements:

Most of our students got placed in highly reputed Biotech companies like Pharma Ace, Biocon Biologics, Strand Lifesciences, Zifo RnD, Dr.Reddys, Anthem Biosciences, GSK, Labcorp, Novo Nordisk, Intdegene, Bhat Biotech, TUV SUD labs, Charoen Pokphand Foods (CPF), Saint Gobain, Organica Biotech, Pfizer, Orchid, OG Healthcare and many more These components makes SBST listed amongst the top schools of Modern Biology in India. Because of our industry based curriculum and strong network with industries, our students got placed in highly reputed and leading biotech companies with the CTC of 2.4 to 7.5 lakhs/ annum.

1.3. Highest CTC for 2022 Batch:

Programme	Branch	Company	Company Status	Domain	Company Type	CTC
M.Sc.	Applied Microbiology	Pharma Ace	Dream	Core	Fulltime	7,50,000
M.Sc.	Applied Microbiology	Biocon Biologics	Dream	Core	Fulltime	3,71,000
M.Sc.	Biomedical Genetics	Strand Lifesciences	Dream	Core	Fulltime	4,00,000
M.Sc.	Biomedical Genetics	Zifo RnD	Dream	Core	Fulltime	4,76,000
M.Sc.	Biotechnology	Dr. Reddys	Dream	Core	Internship + Full Time	3,85,000
M.Sc.	Biotechnology	Pharma Ace	Dream	Core	Fulltime	7,50,000

2. ABOUT THE SCHOOL OF ADVANCED SCIENCES (SAS):

School of Advanced Sciences (SAS) comprises of Physics, Chemistry and Mathematics departments. The school offers M.Sc. programmes in Physics, Data Science and Chemistry with an option with specialization in Analytical or Inorganic or Organic or General Chemistry or Pharmaceutical Chemistry.

The curriculum keeps abreast of the latest advancements in the respective domains and endeavor's to develop scientists of high quality. The primary goal is to prepare a new generation of young scientists for the technical and social needs of the 21st century. Syllabi are on par with IITs. The Departments are DST-FIST recognized. The Curriculum for Applied Learning (CAL) adopted presently is benchmarked with top ranking universities.

The Semester Abroad Program (SAP) offers students an international exposure so as to prepare effectively for professional employment or research degree in basic and applied sciences in addition to classroom and laboratory teaching, the students are engaged in experiential learning through research participation both in the laboratory and in the field. Adding to the traditional science subjects such as mathematics, statistics, physics and chemistry, interdisciplinary program such as pharmaceutical chemistry are offered to meet the needs of the modern society and health firms.

2.1. Major Funding Agencies:

Over the years, the School has been receiving research grants from various funding agencies such as DST, CSIR, DRDO, BRNS, IGCAR, AERB, NBHM, Naval Research Board (NRB), DBT-RGYI, UGC-DAE, Indian Space Research Organisation (ISRO), CII.

2.2. Placements:

Students get recruited through campus placements into various reputed companies like Biocon, Dr. Reddy's lab, Agilent Technologies, Advinus Therapeutics, Aurigene Discovery, Cognizant, Hospira, Shasun, Aurobindo, Dabur, ITC-Blore, Alkem, Orchid, Suven, AMRI, Torrent Pharma, Astra Zenica, Cipla, GVK Biosciences, Sai life Science, Anthem Bioscience, Sami labs, Chem Biotech and Piramal life sciences in addition to Teaching and Research in IITs, CSIR Labs and reputed Universities.

2.3. Highest CTC for 2022 Batch:

Programme	Branch	Company	Company Status	Domain	Company Type	Stipend	CTC
M.Sc.	Business Statistics	Zifo	Dream	Core	Fulltime		4,75,000
M.Sc.	Chemistry	Zifo	Dream	Core	Fulltime		4,75,000
M.Sc.	Physics	Zifo	Dream	Core	Fulltime		4,75,000
M.Sc.	Data Science	JP Morgan Chase & Co.	Super Dream	IT	Internship+Fulltime	75,000	14,50,000

3. GENERAL DISCIPLINE

All applicants admitted to the Institute shall maintain good conduct, pay the requisite tuition fees and other charges by the due dates, attend their classes regularly and abide by the rules and regulations of the Institute.

If at any point of time, if the conduct and character of an applicant is not satisfactory or is of suspicious nature, the Management reserves the right, without assigning any reason, to make him /her vacate the hostel or expel him/her from the Institute.

3.1. Measures for Prevention of Ragging at the Institution Level :

♦ Ragging is totally prohibited in the institution and anyone found guilty of ragging and / or abetting ragging, whether actively or passively, or being a part of a conspiracy to promote ragging, is liable to be punished in accordance with the regulations as well as under the provisions of any penal law for the time being in force.

♦ Ragging juniors in any form is forbidden. If anyone is found ragging his/her juniors, he/she can be rusticated from the Institute.

♦ It is mandatory that Applicants and parents who are attending interview has to sign an undertaking in ₹20 non- judicial stamp paper as per the information given in Annexure-I & II (as per UGC Regulations-2009, www.ugc.ac.in).

4. HOSTEL ACCOMMODATION

Separate hostel accommodation is available for boys and girls.

♦ Hostel accommodation will be provided only to those Applicants whose residence is beyond 100 Kms radius from the Institute.

♦ For details regarding Establishment Charges, Mess, etc., please visit VIT website www.vit.ac.in

5. ADMISSION CANCELLATION PROCESS / REFUND OF FEES

♦ The refund will be made as per the norms of the UGC and Institute guide lines.

5.1. Academic Cancellation: (Documents to be submitted in the Office of PG Admissions)

♦ Apply online in website: Fresher withdrawal

♦ Collect the No Dues Certificate Form from Office of PG Admissions.

♦ Original Provisional Admission Letter

♦ Migration / Transfer / College Leaving Certificate with Original. (if not submitted at the time of admission)

5.2. Hostel Cancellation: (Documents to be submitted in the concerned Hostel Office)

♦ Write an application with Parent Signature.

♦ Collect the No Dues Certificate Form from concern Hostel Office.

♦ Hostel Admission Letter.

M.Sc. - APPLIED MICROBIOLOGY

Programme Educational Objectives (PEO)

PEO	Statements
PEO1:	Excel in professional career and/or higher education by acquiring solid foundation in science, mathematics and advanced technologies
PEO2:	Develop and apply engineering solutions for solving contemporary, social and human issues with realistic constraints suitable for the present need through the use of modern tools.
PEO3:	Exhibit professional and ethical standards, effective communication skills, teamwork spirit, multidisciplinary and transdisciplinary approach for successful careers and to be able to compete globally, function as leaders, as entrepreneurs, and manage information efficiently and engage in lifelong learning

Programme Objectives (POs)

POs	Statements
1	Having a clear understanding of the subject related concepts and of contemporary issues
2	Having problem-solving ability for social issues
3	Having a clear understanding of professional and ethical responsibility
4	Having cross-cultural competency exhibited by working in teams
5	Having a good working knowledge of communicating in English

Programme Specific Outcomes (PSOs)

PSO	Statements
1	Acquire the expertise in the applications of microbial functioning at the advanced level.
2	Equip students to make use of tools, technologies, and methods of microbiology and to apply the scientific methods
3	Ability to independently carry out research and development work to solve the practical problems

Scope of Employment

The scope in Applied Microbiology is immense, due to the involvement of microbiology invarious fields like medicine, pharmaceuticals, dairy products, clinical analysis, agriculture, and nanotechnology. After completion of this programme students gets placed as Academic Researcher , Research Scientist in R&D, Quality assurance and Quality control technologists, Clinical research associate, Clinical data analyst, Clinical Laboratory Scientists, Scientific laboratory technician.

Programme Core Courses

Advanced Microbiology / Analytical Techniques / Molecular Biology / Immunology and Immunotechnology / Microbial Physiology and Metabolism / Fermentation Technology.

Programme Elective Courses

Environmental Microbiology / Food Microbiology / Probiotics Technology / GxPs, Industrial standards and guidelines / Pharmaceutical Biotechnology / Soil and Agricultural Microbiology / Marine Microbiology / Fungal Biotechnology / Cell Culture Technology / Bio business and entrepreneurship / Bioinformatics / Medical Microbiology / Diagnostic Microbiology / rDNA Technology / Industrial microbiology / Nanobiotechnology.

Curriculum

CREDIT INFO		
Sl.No	Catagory	Credits
1	Programme Core	23
2	Programme Elective	22
3	University Core	29
4	University Elective	6
Total Credits		80

Programme Core			
Sl.No	Course Code	Course Title	Credits
1	MSM5002	Advanced Microbiology	4
2	MSM5003	Analytical Techniques	4
3	MSM5004	Molecular Biology	3
4	MSM5005	Immunology and Immunotechnology	4
5	MSM5006	Microbial Physiology and Metabolism	4
6	MSM5010	Fermentation Technology	4

		Programme Elective	
Sl.No	Course Code	Course Title	Credits
1	MSM5007	Environmental Microbiology	4
2	MSM5008	Food Microbiology	4
3	MSM5009	Probiotics Technology	3
4	MSM5011	GxPs, Industrial Standards and Guidelines	3
5	MSM5012	Pharmaceutical Biotechnology	3
6	MSM5013	Soil and Agricultural Microbiology	3
7	MSM5014	Marine Microbiology	3
8	MSM5015	Fungal Biotechnology	3
9	MSM5016	Cell Culture Technology	3
10	MSM5017	Bio Business and Entrepreneurship	3
11	MSM5018	Bioinformatics	4
12	MSM6001	Medical Microbiology	3
13	MSM6002	Diagnostic Microbiology	4
14	MSM6003	rDNA Technology	3
15	MSM6004	Industrial Microbiology	3
16	MSM6005	Nanobiotechnology	3

		University Core	
Sl.No	Course Code	Course Title	Credits
1	EFL6097	English and Foreign Language	2
2	LFS4777	Life Skills - M.Sc Biotechnology 2 year programme 2020 onwards	2
3	MSM5001	Biostatistics	3
4	MSM6099	Master's Thesis	14
5	RES5001	Research Methodology	2
6	SET5001	Science, Engineering and Technology Project - I	2
7	SET5002	Science, Engineering and Technology Project - II	2
8	SET5003	Science, Engineering and Technology Project - III	2

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M.Sc. - BIOMEDICAL GENETICS

Programme Educational Objectives (PEO)

PEO	Statements
PEO1:	Excel in professional career and/or higher education by acquiring solid foundation in science, mathematics and advanced technologies
PEO2:	Develop and apply engineering solutions for solving contemporary, social and human issues with realistic constraints suitable for the present need through the use of modern tools.
PEO3:	Exhibit professional and ethical standards, effective communication skills, teamwork spirit, multidisciplinary and transdisciplinary approach for successful careers and to be able to compete globally, function as leaders, as entrepreneurs, and manage information efficiently and engage in lifelong learning

Programme Objectives (POs)

POs	Statements
1	Having a clear understanding of the subject related concepts and of contemporary issues
2	Having problem-solving ability for social issues
3	Having a clear understanding of professional and ethical responsibility
4	Having cross-cultural competency exhibited by working in teams
5	Having a good working knowledge of communicating in English

Programme Specific Outcomes (PSOs)

PSO	Statements
1	Apply knowledge of genetic principles and understand how they contribute to etiology, clinical features, and disease expression.
2	Exhibit the knowledge of ethical legal, and social issues pertaining to genetic counselling
3	Ability to independently carry out research and development work to solve the practical problems

Scope of Employment

Geneticist work in both medical & scientific fields, they get placed in

- Biotech and Biopharmaceuticals companies.

- Research and Development organisations

- Forensic departments

- Hospitals as cytogeneticist and genetic counsellor.

- Medical research organisation as junior scientists, research fellow

- Academic institutions for higher studies.

Programme Core Courses

Biochemistry / Principles of Genetics / Human Immunology / Human Molecular Genetics/ Developmental Genetics / Cancer Genetics / Clinical Cytogenetics and Prenatal Diagnosis.

Programme Elective Courses

Human Anatomy and Physiology / Advanced Analytical Techniques / Genetics of Human Infertility / Forensic Science / Genetic Engineering / Medical Biochemistry / Ethical, Legal and Social Issues in Genetic Counseling / Clinical Rotation.

Curriculum

CREDIT INFO		
Sl.No	**Catagory**	**Credits**
1	Programme Core	23
2	Programme Elective	22
3	University Core	29
4	University Elective	6
Total Credits		**80**

Programme Core			
Sl.No	**Course Code**	**Course Title**	**Credits**
1	BMG5001	Biochemistry	4.0
2	BMG5002	Principles of Genetics	3.0
3	BMG5003	Human Immunology	3.0
4	BMG5004	Human Molecular Genetics	3.0
5	BMG5007	Developmental Genetics	3.0
6	BMG5008	Cancer Genetics	3.0
7	BMG6002	Clinical Cytogenetics and Prenatal Diagnosis	4.0

Programme Elective			
Sl.No	Course Code	Course Title	Credits
1	BMG5005	Human Anatomy and Physiology	3.0
2	BMG5006	Advanced Analytical Techniques	3.0
3	BMG5009	Genetics of Human Infertility	3.0
4	BMG5010	Radiation Genetics	3.0
5	BMG5011	Cognitive and Behavioral Genetics	3.0
6	BMG5012	Forensic Science	3.0
7	BMG5013	Stem Cell Biology	3.0
8	BMG5014	Environmental Genetics	4.0
9	BMG5015	Introduction to Human Psychology	3.0
10	BMG5016	Bioinformatics	4.0
11	BMG5017	Enzymology	3.0
12	BMG6001	Human Biochemical Genetics	3.0
13	BMG6003	Medical Biochemistry	3.0
14	BMG6004	Genetic Engineering	4.0
15	BMG6005	Genetic Counseling	3.0
16	BMG6006	Ethical, Legal and Social Issues in Genetic Counseling	3.0
17	BMG6007	Clinical Rotation	2.0

University Core			
Sl.No	Course Code	Course Title	Credits
1	BMG6099	Master's Thesis	14.0
2	EFL6097	English and Foreign Language	2.0
3	LFS4777	Life Skills - M.Sc Biotechnology 2 year programme 2020 onwards	2.0
4	MSM5001	Biostatistics	3.0
5	RES5001	Research Methodology	2.0
6	SET5001	Science, Engineering and Technology Project - I	2.0
7	SET5002	Science, Engineering and Technology Project - II	2.0
8	SET5003	Science, Engineering and Technology Project – III	2.0

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M.Sc. - BIOTECHNOLOGY

Programme Educational Objectives (PEO)

PEO	Statements
PEO1:	Excel in professional career and/or higher education by acquiring solid foundation in science, mathematics and advanced technologies
PEO2:	Develop and apply engineering solutions for solving contemporary, social and human issues with realistic constraints suitable for the present need through the use of modern tools
PEO3:	Exhibit professional and ethical standards, effective communication skills, teamwork spirit, multidisciplinary and transdisciplinary approach for successful careers and to be able to compete globally, function as leaders, as entrepreneurs, and manage information efficiently and engage in lifelong learning

Programme Objectives (POs)

POs	Statements
1	Having a clear understanding of the subject related concepts and of contemporary issues
2	Having problem-solving ability for social issues
3	Having a clear understanding of professional and ethical responsibility
4	Having cross-cultural competency exhibited by working in teams
5	Having a good working knowledge of communicating in English

Programme Specific Outcomes (PSOs)

PSO	Statements
1	Apply the principles of molecular biology methods with emphasis on the application of recombinant DNA technology to animals, plants and microbial organisms
2	Manipulate living organisms and biological systems to produce products that advance healthcare, medicine, agriculture, food, pharmaceuticals and environmental control
3	Ability to independently carry out research and development work to solve the practical problems

Scope of Employment

M.Sc. Biotechnology graduates can avail job opportunities in a wide spectrum of sectors like Biopharmaceuticals, Agriculture, Quality control, Clinical Research, Regulatory Affairs, and other R&D jobs. Also, they can plan entrepreneurial ventures: develop biotech products, start Contract Research Organizations.

Programme Core Courses

Microbiology / Advanced Biochemistry / Cell and Molecular Biology / Immunology / Analytical Techniques in Biotechnology / Genetic Engineering / Bioinformatics.

Programme Elective Courses

Medical Diagnostics / Medical Biotechnology / Cancer Biology and Therapeutics / Nutraceuticals / Plant Biotechnology / Genomics and Proteomics / Metabolic Engineering / Tissue Engineering and Regenerative Medicine / Marine Biotechnology / Forensic Science and Technology / Stem Cell Biology.

Curriculum

CREDIT INFO		
Sl.No	Catagory	Credits
1	Programme Core	23
2	Programme Elective	22
3	University Core	29
4	University Elective	6
Total Credits		80

Programme Core			
Sl.No	Course Code	Course Title	Credits
1	BST5001	Microbiology	4
2	BST5002	Advanced Biochemistry	4
3	BST5003	Cell and Molecular Biology	3
4	BST5004	Immunology	2
5	BST5009	Analytical Techniques in Biotechnology	4
6	BST5010	Genetic Engineering	3
7	BST5011	Bioinformatics	3

**Programme Elective**			
Sl.No	**Course Code**	**Course Title**	**Credits**
1	BST5005	Medical Diagnostics	3
2	BST5006	Tissue Engineering and Regenerative Medicine	3
3	BST5007	Medical Biotechnology	3
4	BST5008	Industrial Biotechnology	3
5	BST6001	Cancer Biology and Therapeutics	3
6	BST6002	Stem Cell Biology	3
7	BST6003	Clinical and Translational Research	3
8	BST6004	Forensic Science and Technology	3
9	BST6005	Pharmacology and Toxicology	3
10	BST6006	Medical Informatics	3
11	BST6007	Nutraceuticals	4
12	BST6008	Marine Biotechnology	3
13	BST6009	Nanobiotechnology	3
14	BST6010	Applied Enzyme Technology	4
15	BST6011	Metabolic Engineering	3
16	BST6012	Plant Biotechnology	4
17	BST6013	Bioremediation	3
18	BST6014	Genomics and Proteomics	3
19	BST6015	Signal Transduction	2
20	BST6016	Cellular and Molecular Biophysics	4

**Universtiy Core**			
Sl.No	**Course Code**	**Course Title**	**Credits**
1	BST6099	Master's Thesis	14
2	EFL6097	English and Foreign Language	2
3	MSM5001	Biostatistics	3
4	RES5001	Research Methodology	2
5	SET5001	Science, Engineering and Technology Project - I	2
6	SET5002	Science, Engineering and Technology Project - II	2
7	SET5003	Science, Engineering and Technology Project – III	2
8	STS4777	Soft Skills	2

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M.Sc. - BUSINESS STATISTICS

Overview:

Business statistics is the science of good decision making in the face of uncertainty and is used in many disciplines such as econometrics, auditing and production and operations, including services improvement and marketing research.

Statistics open doors in engineering, business, finance, computing, data sciences, health sciences, environmental sciences and public policy.

Statistics make it possible to analyse real-world business problems with actual data so that you can determine if a marketing strategy is really working.

The **science of statistics** uses regression analysis, hypothesis testing, sampling distributions, and more to ensure accurate data analysis.

Business Statistics refers to the application of statistical tools and techniques to business and managerial problems for the purpose of decision making.

Business Statistics involves the application of statistical tools in the area of marketing, production, finance, research and development, manpower planning etc. to extract relevant information for the purpose of decision making.

Business managers use **statistical tools and techniques** to explore almost all areas or business operations of public and private enterprises.

Business Statistics helps a business to :

♦ Deal with uncertainties by forecasting seasonal, cyclic and general economic fluctuations

♦ Helps in Sound Decision making by providing accurate estimates about costs, demand, prices, sales etc.

♦ Helps in business planning on the basis of sound predictions and assumptions

♦ Helps in measuring variations in performance of products, employees, business units etc.

♦ It allows comparison of two or more products, business units, sales teams etc.

♦ Helps in identifying relationship between various variables and their effect on each other like effect of advertisement on sales

♦ Helps in validating generalizations and theoretical concepts formulated by managers

Programme Objectives

♦ Modern facilities to provide ambience and support for curricular and extra-curricular activities for the overall development of students.

♦ Dedicated, qualified faculty to ensure high standard of teaching, learning and evaluation processes.

♦ Periodic review and revision of curricula based on feedback from the industry and academia with quick response to ensure the relevance of the programmes to the changing needs of industry.

♦ Semester system with proper planning to utilize the resources effectively.

♦ Industry based project work as part of the curricula to get recognition and reward to the students in the form of job offer or support for further studies and research.

♦ Industry based project work as part of the curricula to get recognition and reward to the students in the form of job offer or support for further studies and research.

♦ The Industry Interaction Program has been initiated to keep the students abreast of the latest trends in the industry/research organizations through industrial visits and guest lectures.

♦ Every student will have to complete a research project, preferably industry oriented.

Uniqueness of Programme

♦ A Unique program, blending traditional M. Sc. with practical application skill set building.

♦ Extensive course work in line with the requirements of Industry, thus adding value to the degree.

♦ Development of skills to use statistical and computational techniques as research/data analysis tools like SAS, SPSS, R, Python.

♦ In built opportunity to improve soft skills as well as scientific writing.

♦ Grading system at par with international standards.

♦ A system of continuous evaluation through seminars, quizzes and practical.

♦ Guest faculty drawn from a pool of experts from Industry/academia thereby ensuring a balanced and continuous interaction with the industry.

♦ Innovative teaching methods involving continuous interaction amongst faculty and students, using a blend of traditional and modern techniques, as well as live projects for better understanding.

♦ Blending theory with practical using top end statistical tools (MS Excel, Studio, ,Python, SPSS, Base SAS, SAS Predictive Modeling)

♦ Focuses on the holistic development of the student to help enhance knowledge and skillsets for an edge in employability after completion of the course.

Programme Specific Outcomes

♦ have the **versatility** to work effectively in a broad range of analytic, scientific, government, financial, health, technical and other positions.

♦ have a **broad background** in Mathematics and Statistics, an appreciation of how its various sub-disciplines are related, the ability to use techniques from different areas, and an **in-depth knowledge** about topics chosen from those offered through the department.

- be mathematically, statistically and numerically **literate**. In particular, graduates will:
- recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines;
- be familiar with a variety of examples where mathematics or statistics helps accurately explain abstract or physical phenomena;
- recognize and appreciate the connections between theory and applications;
- be able to independently read mathematical and statistical literature of various types, including survey articles, scholarly books, and online sources; and
- be life-long learners who are able to independently expand their mathematical or statistical expertise when needed.

Non-Subject-Specific-Outcomes:

- **Logic and Critical Thinking**. Graduates will:
- have a facility with abstract reasoning, including the ability to abstract from concrete situations and make ideas precise by formulating them mathematically or statistically;
- be able to analyze, test, and interpret technical arguments, and form independent judgements. This includes their own arguments and those of others, in both academic and non-academic contexts.
- **Problem solving**. Graduates will be able to:
- use their mathematical and statistical training to help guide possible lines of inquiry;
- solve complex problems by identifying feasible divisions into simpler sub-problems;
- gather and organize relevant qualitative and quantitative information such as related problems, examples and counterexamples;
- sharpen and/or focus mathematical or statistical questions as a problem solving strategy;
- identify suitable existing methods of analysis, if any, and assess their strengths and weaknesses in the context of the problem being considered;
- construct abstract models using appropriate mathematical and statistical tools;
- use computers and software as exploratory, visualization, modelling and computational tools;
- engage their creativity in the quest for novel or elegant solutions;
- document problem solving steps and reliably certify the validity of their methods and results (self-check); and interpret and critically evaluate their qualitative and quantitative results in the context of the original problem, and make recommendations.
- **Communication**. Graduates will be able to:
- work effectively in a multi-disciplinary environment;
- accept comments and feedback, and learn from them;
- explain fundamental mathematical or statistical concepts to non-experts;
- justify choices made during problem solving and interpretation of results;
- present the results and assessment of a problem solving strategy; and
- Clearly communicate logical arguments both orally and in writing to a range of audiences.

Scope of Employment

- Research Centres
- Manufacturing Sector
- Pharmaceutical Companies
- Educational Institutes
- Scientific Research Organisations
- Public Sector Research Organisations
- Market Research Companies
- Banking Sector
- Insurance Companies

Careers and opportunities

When you graduate, you'll have the skills and knowledge needed for a successful career in software industry or business or management roles.

What jobs can you do with a Business Statistics degree?

Career opportunities include:

- Business Analyst
- Financial Analyst
- Market Research analysts
- Investment Analyst
- Actuarial Analyst
- Data analyst
- Statistician
- Business development and consultancy
- E-marketing
- Publicity
- Financial and risk analysis
- Market researcher
- Project management
- Research Scientist
- Survey Researchers
- SAS Programmer

Alternatively, you may choose to start your own business, or enter further academic study. Whatever you decide to do, you'll get advice and support from our Placements and Training office.

Evaluation Criteria:

The students will be required to have a minimum attendance of 75%. The students will be evaluated through term-end exams and through continuous internal assessment.

Internal assessment will be on the basis of continuous assessment tests, Quiz, and Assignments based on Theory. Practical work will be evaluated each week during the course of the regular practicals. Seminars will be evaluated periodically. The grade will be awarded at the end of the year on the basis of Cumulative Grade Point Average.

The rigorous course work is spread over 4 semesters, including an Industry Project.

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M.Sc. - CHEMISTRY

Programme Educational Objectives

∗ To divulge students in the frontier areas of chemistry

∗ To enhance the employability skills of the students and prepare them for placement in R&D centres, top-ranked academic institutes and industries

∗ To expose students in the research - based learning

∗ To encourage students to be a part of active research groups and motivate to conduct independent research.

Scope of Employment

∗ In R&D centres, Universities of advanced learning, Research Centre of Excellence, Industries, Multi-national companies

∗ In QC / QA Departments of Chemical and Pharmaceutical industries

∗ Process and Production Department of Chemical and Pharmaceutical industries

∗ Advanced computations utilizing Bio-informatics and Chem-informatics

Programme Content

∗ Mathematics

∗ Scientific English

∗ Foreign Language

∗ Soft Skill

∗ SET Conference (we have to expand this as Science and Engineering Technology)

∗ Research Methodology

∗ Master's Thesis

Programme Core

* General chemistry

* Inorganic chemistry

* Analytical chemistry

* Organic chemistry

* Physical chemistry

Core Lab Courses

* Inorganic chemistry

* Analytical chemistry

* Organic chemistry

* Physical chemistry

* General chemistry

Programme Electives

* NMR, EPR and Mass spectrometry

* Bioorganic Chemistry

* Chemistry of Natural Products

* Green Chemistry

* Polymer Chemistry

* Intellectual Property Rights

* Drug Design, Biophysical Chemistry

* Organometallics and Industrial Applications

* Nanomaterials

* Computational Chemistry

* Quantum Chemistry

* Group Theory

* Molecular Spectroscopy

Inorganic Chemistry Specialization

∗ Advanced Inorganic Chemistry

∗ Materials Chemistry

∗ Nanomaterials & Characterization Techniques

∗ Inorganic Photochemistry

Organic Chemistry Specialization

∗ Advanced Organic Chemistry

∗ Chemistry of Heterocyclic Compounds

∗ Organic Synthesis & Methodologies

∗ Photochemistry and Pericyclic Reactions

General Chemistry

∗ Advanced Inorganic Chemistry

∗ Advanced Organic Chemistry

∗ Advanced Physical Chemistry

∗ Analytical Quality Control and Quality Assurance

∗ Organic Synthesis and Methodologies

∗ Materials Chemistry

∗ Medicinal Chemistry

Analytical Chemistry Lab Course

∗ Analytical/Physical Chemistry Practical-I

∗ Analytical/Physical Chemistry Practical-I

∗ Analytical Chemistry Practical-III

Organic Chemistry Lab Course

∗ Organic Chemistry Practical-I

∗ Organic Chemistry Practical-II

∗ Organic Chemistry Practical-III

General Chemistry Lab Course

∗ Analytical/Physical Chemistry Practical-I

∗ Analytical/Physical Chemistry Practical-II

∗ Inorganic Chemistry Practical-I (Synthesis and Characterization)

∗ Inorganic Chemistry Practical-II(Synthesis and Characterization)

∗ General Organic Practical

Inorganic Chemistry Lab Course

∗ Inorganic Chemistry Practical-I (Synthesis of Inorganic Materials)

∗ Inorganic Chemistry Practical-II (Synthesis of Inorganic Materials)

∗ Inorganic Chemistry Practical-III (Characterisation and properties measurements of Inorganic Materials)

Pharmaceutical Chemistry - Theory

∗ Pharmaceutical Quality control and Quality assurance

∗ Pharmacognosy and phytochemistry

∗ Medicinal Chemistry

Pharmaceutical Lab Course

∗ Medicinal Chemistry practical

∗ Pharmacognosy & Phytochemistry practical

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M.Sc. - DATA SCIENCE

Programme Educational Objectives

• To become a skilled data scientist in industry, academia, or government.

• To use specialist software tools for data storage, analysis and visualization.

• To develop original ideas and solve complex problems based on advanced knowledge of the principles and methodologies of data science.

• To integrate knowledge and handle complexity in the area of computer science and information engineering.

Scope of Employment

• Data Analyst

• Business Analyst

• Data Visualisation Engineer

• Internal Data Science Consultant

• New roles in all sectors that are experiencing digital transformation

Programme Content (University Core)

• Foundations of Data Science

• English for Science and Technology

• Foreign Language

• Soft Skill

• SET Conference

• Research Methodology

• Master's Thesis

Programme Core

- Probability Theory and Distributions
- Matrix Theory and Linear Algebra
- Statistical Inference
- Regression Analysis and Predictive Models
- Multivariate Data Analysis
- Time series analysis and Forecasting

University Elective

- Big- Data Analytics
- **Database Systems**: Design and Implementation
- **Algorithms**: Design and Implementation
- Exploratory Data Analysis
- Neural Networks
- Fuzzy Systems
- Statistical Natural Language Processing
- Data Mining and Business Intelligence

Programme Elective

- Python Programming for Data Science
- Programming for Data Analysis
- Deep Learning
- Data Mining and Information Security
- Statistics for Managers
- Design and Analysis of Experiments
- Optimization Techniques
- Statistical Quality Control
- Stochastic Process and Applications
- Reliability Theory and Survival Analysis
- Queuing Theory and Network Analysis
- Bio-Statistics

- Statistical Natural language Processing

- Actuarial Statistics

- Artificial Intelligence

- Spatial Data Analytics

- Exploratory Data Analysis and Visualization

- Machine Learning for Data Science

- Fuzzy Statistics

M.Sc. - PHYSICS

Programme Educational Objectives

To provide the highest level of knowledge at Masters level and encourage to apply it to solve the real-world societal problems through innovations.

Scope of Employment

- Academia and Industries

- Opportunity to pursue higher education (Ph.D.) in India and abroad

- Teaching

Programme Content

- Applied Statistical Methods

- Research Methodology

- Scientific English

- Soft Skills

- SET Projects (Science and Engineering Technology)

- Master's Thesis

Programme Elective

- Introduction to Solid State Physics

- Nuclear and Particle Physics

- Atomic and Molecular Physics

- Basic Electronics

- Advanced Solid state Theory

- Nanomaterials and its applications

- Optoelectronics

- Laser and Fiber Optics

- Bio Physics

- Microwave Physics and Device Technology

- Plasma Physics and Technology.

Programme Core

Sl.No	Course
1	Mathematical Physics
2	Classical Mechanics
3	Electromagnetic Theory
4	Quantum Mechanics
5	Statistical Mechanics

Lab Courses

- General Physics Lab-I

- General Physics Lab-II

- Optoelectronics Lab

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