

# B.A. (PROG) MATHS

## Programme Outcomes

### ❖ Aims of Bachelor's degree programme in Mathematics

The overall aims of B.Sc.(PROG) Mathematics Programme are to:

- inculcate strong interest in learning mathematics.
- evolve broad and balanced knowledge and understanding of definitions, key concepts, principles and theorems in Mathematics
- enable learners/students to apply the knowledge and skills acquired by them during the programme to solve specific theoretical and applied problems in mathematics.
- develop in students the ability to apply relevant tools developed in mathematical theory to handle issues and problems in social and natural sciences.
- provide students with sufficient knowledge and skills that enable them to undertake further studies in mathematics and related disciplines
- enable students to develop a range of generic skills which will be helpful in wageemployment, self-employment and entrepreneurship.

### ❖ Graduate Attributes in Mathematics

Some of the graduate attributes in mathematics are listed below:

- **Disciplinary knowledge:** Capability of demonstrating comprehensive knowledge of basic concepts and ideas in mathematics and its subfields, and its applications to other disciplines.
- **Communications skills:** Ability to communicate various concepts of mathematics in effective and coherent manner both in writing and orally, ability to present the complex mathematical ideas in clear, precise and confident way, ability to explain the development and importance of mathematics and ability to express thoughts and views in mathematically or logically correct statements.
- **Critical thinking and analytical reasoning:** Ability to apply critical thinking in understanding the concepts in mathematics and allied areas; identify relevant assumptions, hypothesis, implications or conclusions; formulate mathematically correct arguments; ability to analyse and generalise specific arguments or empirical data to get broader concepts.
- **Problem solving:** Capacity to use the gained knowledge to solve different kinds of non-familiar problems and apply the learning to real world situations; Capability to solve problems in computer graphics using concepts of linear algebra; Capability to apply the knowledge gained in differential equations to solve specific problems or models in operations research, physics, chemistry, electronics, medicine, economics, finance etc.
- **Research-related skills:** Capability to ask and inquire about relevant/appropriate questions, ability to define problems, formulate hypotheses, test hypotheses, formulate mathematical arguments and proofs, draw conclusions; ability to write clearly the results obtained.

- **Information/digital literacy:** Capacity to use ICT tools in solving problems or gaining knowledge; capacity to use appropriate softwares and programming skills to solve problems in mathematics,
- **Self-directed learning:** Ability to work independently, ability to search relevant resources and e-content for self-learning and enhancing knowledge in mathematics.
- **Moral and ethical awareness/reasoning:** Ability to identify unethical behaviour such as fabrication or misrepresentation of data, committing plagiarism, infringement of intellectual property rights.
- **Lifelong learning:** Ability to acquire knowledge and skills through self-learning that helps in personal development and skill development suitable for changing demands of work place.

**A student opting for mathematics along with other humanity disciplines is able to:**

- Solve problems using a broad range of significant mathematical techniques, including calculus, algebra, geometry, analysis, numerical methods, differential equations, probability and statistics along with hands-on-learning through CAS and LaTeX.
- Construct, modify and analyze mathematical models of systems encountered in disciplines such as economics, psychology, political sciences and sociology, assess the models' accuracy and usefulness, and draw contextual conclusions from them.
- Use mathematical, computational and statistical tools to detect patterns and model performance.
- Choose appropriate statistical methods and apply them in various data analysis problems.
- Use statistical software to perform data analysis.
- Have fundamental research design and mathematical/statistical skills needed to understand the acquired discipline specific knowledge.