School of Computing and Technology

Bachelor of Computer Applications (BCA) from 2023 - 2024

Affiliated to the University of Mumbai

Eligibility: Class XII Passed from any stream Arts / Science / Commerce / MCVC (**Mathematics nor compulsory**), Completed three – year Diploma after Class X or two – year Diploma after Class XII. Students without Mathematics will have to undergo a bridge course on Mathematics. The Bridge Course will be conducted by the college itself.

First year Fee: Rs. 59110/-

Welcome to the Bachelor of Computer Applications (BCA) programme at PTVA's Mulund College of Commerce (Autonomous)! This programme is designed to provide students with knowledge and skills to become successful professionals in the field of computing.

The BCA programme focuses on computer fundamentals, programming in languages such as C and Java, database management, internet technologies, operating system concepts, and more.

The curriculum offers a balanced approach to software development, and the courses cover a wide range of topics ranging from design principles to software security. Throughout the programme, students develop practical skills and apply their knowledge in hands-on projects.

This programme enables students to create a strong foundation of computing concepts and gets them ready to develop computer applications and website for organisations.

We look forward to providing students with the knowledge and skills they need to become successful professionals in the field of computer applications and welcome them to the BCA programme.

B.Sc. Data Science from 2022 – 2023

Affiliated to the University of Mumbai

Eligibility: Class XII Passed from any stream Arts / Science / Commerce / MCVC (**Mathematics nor compulsory**), Completed three – year Diploma after Class X or two – year Diploma after Class XII. Students without Mathematics will have to undergo a bridge course on Mathematics. The Bridge Course will be conducted by the college itself.

First year Fee: Rs. 63110/-

Data Science refers to extraction of knowledge from large volumes of data that are structured or unstructured, which is continuation of data mining and predictive analytics. It involves different categories of analytical approaches for modelling various types of business scenarios and arriving at solution and strategies for optimal decision-making in marketing, finance, operations, organizational behaviour and other managerial aspects. This new field of study breaks down into a number of different areas, from constructing big data infrastructure and configuring the various server tools that sit on top of the hardware, to performing the analysis and developing the right transformations to generate useful results.

Data Science is an interdisciplinary field that combines the magic of programming, mathematics and business. Combined with Machine Learning, it helps to identify a future trend which can be used to derive actionable insights for creating future impact. These skills will help for the role of a Data Scientist. As a Data Science aspirant, learner will be emphasising of the knowledge to share from the quantitative analysis to programming concept and extended to business intelligence. Data science can add value to any business which can use the data well.

Data Science consists of 3 parts namely:

Machine Learning: Machine Learning involves algorithms and mathematical models, chiefly employed to make machines learn and prepare them to adapt to everyday advancements.

Big Data: Everyday, we are producing so much of data in the form of clicks, orders, videos, images, comments, articles, RSS Feeds etc. These data is generally unstructured and is often called as Big Data. Big Data tools and techniques mainly help in converting this unstructured data into a structured form.

Business Intelligence: Each business has and produces too much data every day. This data when analysed carefully and then presented in visual reports involving graphs, can bring good decision making to life. This can help the management in taking the best decision after carefully delving into patterns and details the reports bring to life.

What Does a Data Scientist Do?

- Empower the management and controlling officers to make better decisions
- Direct actions based on trends, which in turn help to define new goals
- Identify opportunities

- Making decisions with quantifiable, data-driven evidence
- Test the decisions taken
- Identify and refine the target audiences
- Recruit the right talent for the organisation

- Build a strong foundation of statistics for data science.
- Use all the features and new updates of Python and R for data science.
- Perform scientific and technical computing using the Python SciPy package and its sub-packages Integrate, Optimize, Statistics, IO, and Weave.
- Gain expertise in mathematical computing using the NumPy and Scikit-Learn package
- Gain an in-depth understanding of data structure and data manipulation
- Understand and use linear and non-linear regression models and classification techniques for data analysis
- Obtain a comprehensive knowledge of supervised and unsupervised learning models such as linear regression, logistic regression, clustering, dimensionality reduction, K-NN and pipeline
- Master the concepts recommendation engine, time series modelling, gain practical mastery over principles, algorithms, and applications of Machine Learning
- Learn to analyse data using Tableau and Power BI and become proficient in building interactive dashboards
- Understand deep reinforcement learning techniques applied in Natural Language Processing
- Understand the different components of the Hadoop ecosystem and learn to work with HBase, its architecture and data storage, learning the difference between HBase and RDBMS, and use Hive and Impala for partitioning
- Understand MapReduce and its characteristics and learn how to ingest data using Sqoop and Flume

B.Sc. Information Technology from 2001 - 2002

Affiliated to the University of Mumbai

Eligibility: Class XII Passed from any stream Arts / Science / Commerce (with **Mathematics as one of the subjects).**

First year Fee: Rs.30135/-

The B.Sc. Information Technology programme was started by the University of Mumbai in 2001 with an aim to make the students employable and impart industry-oriented training. The main objectives of the programme are:

- to think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
- to apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.
- to be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
- to work effectively as a part of a team to achieve a common stated goal.
- to adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.
- to communicate effectively with a range of audiences both technical and non-technical.
- to develop an aptitude to engage in continuing professional development.

The new syllabus under autonomy and now under NEP 2020 is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like:

- Software Development (Programming)
- Website Development
- Mobile app development
- Embedded Systems Programming
- Embedded Systems Development
- Software Testing
- Networking
- Database Administration
- System Administration
- Cyber Law Consultant
- GIS (Geographic Information Systems)
- IT Service Desk
- Security

And many others

The students will also be trained in communication skills and green computing.

B.Sc. Computer Science from 2001 - 2002

Affiliated to the University of Mumbai

Eligibility: Class XII Passed from Science Stream (with **Mathematics as one of the subjects).**

First Year Fee: Rs. 34635/-

The revised and restructured curriculum for the Three-year integrated course is systematically designed considering the current industry needs in terms of skills sets demanded under new technological environment. It also endeavors to align the programme structure and course curriculum with student aspirations and corporate expectations. The proposed curriculum is more contextual, industry affable and suitable to cater the needs of society and nation in present day context. The revised structure is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals. In these Semesters we have made the advancements in the subject based on the previous Semesters Knowledge.

The curriculum contains two semesters, each semester contains two Electives: Elective-I and II. Every elective contains two papers based on specific areas of Computer Science. This revised curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her ability in the subject practically through the Project Implementation. In Semester V and Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the project topic is kept open covering most of the areas of Computer Science subject as per the student's interest and the subject they have learned during the course.

The curriculum contains challenging and varied subjects aligned with the current trend with the introduction of Machine Intelligence specific subject such as Artificial Intelligence, Information Retrieval. Data Management related subjects such as Cloud Computing, Soft Computing, Data Science, Big Data NoSQL. Image processing topics such as Game Programming, Digital Image Processing. Introduction of physical world through Wireless Sensor Networks and Mobile Communication. Security domain is also evolved by the introduction of Ethical Hacking, Cyber Forensic and Information and Network Security. To get the hands on experience Advanced Web Technologies, Linux Server Administration and Web Services topics are included.

In essence, the objective of this syllabus is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals.