

PROGRAM CODE: DS7A

PROGRAM TITLE: Master of Technology (M.Tech.)-Executive
- Data Science

- BATCH: 2021-23

PROGRAMME PROFILE

Introduction:

There are many industries, such as social media, healthcare, insurance, e-commerce, transport, government, banking, telecommunications, etc., that are producing massive amounts of data, the so-called "BIG DATA", with Volume, Velocity, Variety, Veracity and Value (the five "Vs" of Big Data challenges) at an unprecedented scale. This has led to a critical need for skilled professionals, popularly known as *Data Scientists*, who can mine and interpret the data. Making sense of this massive data is a very difficult challenge for scientific, technological and industrial disciplines. Data science is concerned with the acquisition, storage, retrieval, processing and finally the conversion of data into knowledge where the quantum of data is very large. Three disciplines that have strong relationships with data science are computer science, mathematics and statistics.

Unfortunately, there is a gap between the demand and supply of data scientists and technologists. To fill up this gap School of Data Science and Forecasting has developed a two-year M.Tech. (Executive) program in Data Science area that is flexible and can be self-paced. This program is exclusively designed to cater to the needs of **working executives**, wherein a candidate is expected to earn about twelve credits per semester from theory-cum-practical classes and remaining eight credits per semester from online courses and project work. The classes will be held over the weekends (or other timings suitable for working professionals). About 12-14 hours teaching-cum-practical classes per week will be conducted.

The curriculum covers subjects such as linear algebra, calculus, forecasting methods, operations research, statistical research methods, Hadoop/Spark, R, Python, Big data, cloud computing, system dynamics, etc. Students have the opportunity to gain hands-on experience with a variety of analytical tools available for the purpose of structuring large data sets to unearth hidden information to allow the organizations to build and sustain a long-term competitive advantage. The capstone of the programme is a project work in each semester in which students apply the acquired theoretical knowledge in data science to solve real-world business problems.

Objectives:

The broad objectives of the programme are as follows:

- To train and develop in depth understanding of the key technologies in data science such as data mining, data visualization techniques, Hadoop, R, forecasting methods, and statistics.
- To impart knowledge on various theoretical and practical aspects of data science.
- To practice problem analysis and decision-making.

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- To gain practical, hands-on experience with statistical programming languages and big data tools.

Eligibility:

The candidate should have at least 55% aggregate marks in B.E. / B.Tech./ M.Sc. in a relevant subject or any other equivalent degree (including M.C.A.) from a recognised University. Relaxation of 5% marks in eligibility for SC/ ST candidates. Relevant subjects, for admission in M.Tech. Data Science, are CS/CSE/IT/Maths./Physics/ Statistics/ Computer Applications or other computer related subjects.

The candidates must have minimum two years of working experience after qualifying degree. The candidates have to submit a certificate from the employer on the prescribed Performa.

Admission Procedure:

The candidates will be admitted as per the merit developed on the basis of % of marks obtained in the following categories:

| Category | Qualifying examination | Written Test | Interview | Service Experience* | Total |
|------------|------------------------|--------------|-----------|---------------------|-------|
| Max. Marks | 100 | 50 | 30 | 20 | 200 |

* Service experience - 2 marks per year limited to max. 20 marks.

Seats:

Unreserved-15; SC-1; ST-2; Sponsored-5 (Total seats: 18).

Duration:

Four Semesters (Two Years).

Fee Structure:

| Semester | Academic Fee | Development & Maintenance Fee | Students' Services Fee | | Examination Fee | Total (Rs.) | |
|----------|--------------|-------------------------------|------------------------|-------|-----------------|-------------|-------|
| | | | Boys | Girls | | Boys | Girls |
| First | 15000 | 12500 | 3300 | 3111 | 2500 | 33300 | 33111 |
| Second | 15000 | 12500 | 2911 | 2722 | 2500 | 32911 | 32722 |
| Third | 15000 | 12500 | 3300 | 3111 | 2500 | 33300 | 33111 |
| Fourth | 15000 | 12500 | 2911 | 2722 | 2500 | 32911 | 32722 |

- If a student repeats a paper(s) in a semester, an additional fee of Rs.500/- per paper shall be payable.
- Central Library Fee will be extra.
- For NRI/ NRI Sponsored/ PIO/ Foreign Nationals Belong to SAARC or BIMSTEC: Fee in each semester will be 2.5 times of the above mentioned existing total fee.

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- Foreign Nationals Belong to other than SAARC or BIMSTEC: Fee of US\$ 3500 per annum shall be payable on yearly basis.
- Caution Money (Refundable) and Alumni Fee (Chargeable in the First Semester):

| Category | Caution Money | Alumni Fee |
|---|---------------|------------|
| For Indian Nationals | Rs. 4,000 | Rs. 500 |
| For NRI/ NRI Sponsored/ PIO/ Foreign Nationals Belong to SAARC or BIMSTEC | Rs. 10,000 | Rs. 1,000 |
| Foreign Nationals Belong to other than SAARC or BIMSTEC | USD 500 | USD 100 |

Learning Outcomes:

Students after completing the M.Tech. programme in Data Science for Working Executives will be able to:

- Work with messy data, applying models, and understanding the business context.
- Work with unstructured data from various sources like video and social media.
- Use Data Visualization techniques.
- Write the programming codes in R and Python.
- Employ cutting edge tools and technologies to analyze Big Data.
- Demonstrate knowledge of mathematical and statistical skills.
- Demonstrate use of team work, leadership skills, and decision making.