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M.Tech.
DATA SCIENCE & ENGINEERING
for Working Professionals

BITS Pilani
Pilani | Dubai | Goa | Hyderabad | Mumbai
An Institution of Eminence

WORK INTEGRATED LEARNING PROGRAMMES

HCL

According to LinkedIn's Emerging Jobs report, Data Science has emerged as the fastest-growing job globally, with a remarkable growth rate of over 650% since 2012. Moreover, the Data Science market is predicted to follow an upward trajectory, increasing from USD 37.9 billion in 2019 to a projected value of USD 230.80 billion by 2026.

Prepare for a career in Data Science with India's most comprehensive and world-class M.Tech. Data Science & Engineering Programme without taking a career break. This four-semester programme by BITS Pilani WILP enables Software and IT professionals to build stellar skill set required to advance their career as a Data Analyst, Data Engineer, Data Architect, and Data Scientist, etc.

WHO SHOULD APPLY?

Software and IT professionals working as Software Engineer, Programmer, Software Test Engineer, Support Engineer, Data Analyst, Business Analyst, who wish to transition to roles such as Data Scientist or Data Engineer should consider applying to this programme.

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WHAT ARE
THE HIGHLIGHTS
OF THE PROGRAMME?

▶ M.Tech. Data Science and Engineering is a BITS Pilani Work Integrated Learning Programme (WILP). BITS Pilani Work Integrated Learning Programmes are UGC approved.

▶ The programme is of four semesters, with online classes conducted mostly on weekends or after business hours. You can pursue the programme without any career break.

▶ Offers the most comprehensive Data Science Curriculum for working professionals.

▶ The programme has an unmatched range & depth, and covers fundamentals to advanced skill & knowledge areas associated with the domain of Data Science.

▶ Aimed at transitioning software & IT professionals into Data Science careers tracks closest to their interest/passion.

▶ Curriculum maps knowledge and skill areas required to perform popular Data Science job roles such as Data Analyst, Data Engineer, Data Architect, and Data Scientist, etc.

▶ The programme offers a set of core courses and elective courses, allowing students to specialize in Data Management for Machine Learning, Ethics for Data Science, Optimization Techniques for Analytics, Natural Language Processing, etc.

▶ The programme makes use of Tools and Technologies. These include Apache Spark, Apache Storm for Big Data Systems/ Real time Processing; Tableau for data visualisation; Tensorflow for Deep Learning; Various Packages within Python for data processing, machine learning, data visualization etc.

▶ The Dissertation (Project Work) in the final semester enables students to apply concepts and techniques learned during the programme.

▶ The programme uses a Continuous Evaluation System that assesses the learners over convenient and regular intervals. Such a system provides timely and frequent feedback and helps busy working professionals stay on course with the programme.

▶ The education delivery methodology is a blend of classroom and experiential learning. Experiential learning consists of lab exercises, assignments, case studies and work-integrated activities.

▶ Participants who successfully complete the programme will become members of an elite & global community of BITS Pilani Alumni

▶ Option to submit fee using easy-EMI with 0% interest and 0 down payment.

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WHAT ARE THE PROGRAMME OBJECTIVES?

The most lucrative jobs in the areas of Data Science, Data Engineering and Advanced Analytics go to professionals who have mastered a combinations of critical skills such as Mathematical modeling, Machine learning, Artificial Intelligence, Product development and Scripting languages.

The programme aims to help participants build a solid foundation in these areas by developing skills in:

- ▶ Data structures and algorithms and managing time and space-related complexities.
- ▶ Computer organisation, architecture and Operating systems and advanced techniques for data processing.

- ▶ Data Mining aspects including preprocessing, cleaning & classification, and Data engineering & processing through distributed computing and cloud computing.
- ▶ Advanced computing and analytical skills in areas such as Machine Learning, Artificial Intelligence, Deep Learning and Natural Learning Processing.
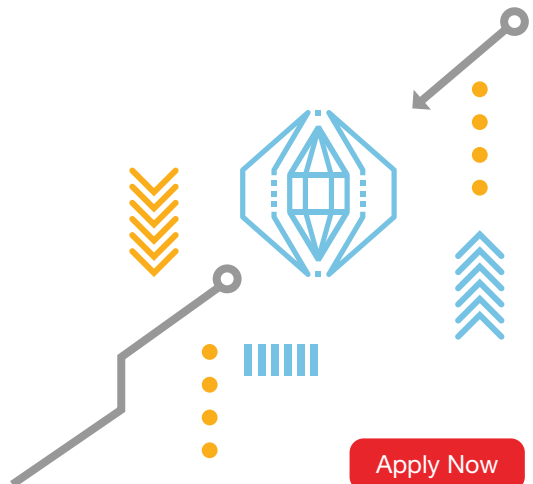
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LEARNING METHODOLOGY

ATTEND ONLINE LECTURES OVER WEEKENDS

Lectures are conducted live via online classes. These lectures can be attended via the internet using a computer from any location. These online classrooms offer similar levels of interactivity as regular classrooms at the BITS Pilani campus.

The class schedule is announced within 1 week of completion of the admission process.

The online lectures are conducted usually over weekends for a total of 7-8 hours per week. If you miss a lecture, you can also access the recorded lecture on the internet.

DIGITAL LEARNING

Learners can access engaging learning material at their own pace which includes recorded lectures from BITS Pilani faculty members, course handouts and recorded lab content where applicable.

CONTINUOUS ASSESSMENT

Continuous Assessment includes graded Assignments/ Quizzes, Mid-semester exam, and Comprehensive Exam.

EXPERIENTIAL LEARNING

The programme emphasises on Experiential Learning that allows learners to apply concepts learnt in classroom in simulated and real work situations. This is achieved through:

Tools & Technologies covered

Spark   kafka

APACHE STORM   tableau

TensorFlow   python

PROJECT WORK

During the final semester participants carryout a semester-long intensive project work applying the various concepts learnt throughout the program guided by the organisation mentor and supervisor. Participants are provided access to virtual labs where applicable, and faculty expertise to support the project work.

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WHAT IS THE ELIGIBILITY CRITERIA?

To apply, candidates must be employed professionals holding B.E. / B.Tech. / MCA / M.Sc. or equivalent with at least 60% aggregate marks or more in their qualifying exam, and minimum 18 months relevant work experience within HCL are eligible to apply.

Applicants should possess basic programming knowledge and adequate background in Mathematics.

The above are only the minimum criteria to apply. The final decision to offer admission to an applicant rests with BITS Pilani which will be made based on an overall review of your application information.

FEE STRUCTURE

Fee Structure for students admitted in Academic Year 2023-24 in the Cluster an Certification Programmes is as follows

Application Fees (one time)	:INR	1,500
Admission Fees (one time)	:INR	16,500
Semester Fees (per semester)	:INR	68,500

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PROGRAMME CURRICULUM

The programme features 12 courses between Semester 1-3, and a Dissertation in Semester 4. All the courses will be offered using live online mode.

First Semester

- Mathematical foundations for Data Science
- Introduction to Data Science
- Computer Organization and Systems Software data
- Structures and Algorithm Design

Second Semester

- Introduction to Statistical Methods
- Elective - I
- Elective - II
- Elective - III

Third Semester

- Big Data Systems
- Elective - IV
- Elective - V
- Elective - VI

Fourth Semester

- Dissertation

Electives

- Data Warehousing
- Graphs – Algorithms and Mining Deep Learning
- Probabilistic Graphical Models Ethics for Data Science
- Optimization Techniques for Analytics Data
- Management for Machine Learning Natural Language Processing
- Design of Experiments for Data Science Information Retrieval
- Data Visualization and Interpretation
- Stream Processing and Analytics Artificial and Computational Intelligence Machine Learning #*
- Applied Machine Learning

Note: #*Machine Learning course is a prerequisite for Deep Learning elective course.

Electives finally offered will be at the discretion of the BITS Pilani, and will be decided in consultation with HCL. Offered electives will be made available to enrolled students at the beginning of each semester.

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HOW
TO APPLY

▶ Click here to visit the Online Application Center. Create your login at the Online Application Center by entering your official HCL Email ID only and create a password of your choice. Once your login has been created, you can anytime access the Online Application Center using your official email ID and password

▶ Begin by clicking on Step 1 - 'Fill/ Edit and Submit Application Form'. This will enable you to select the programme of your choice. After you have chosen your programme, you will be asked to fill your details in an online form. You must fill all details and press 'Submit' button given at the bottom of the form

▶ Now, click on 'Pay Application Fee' to pay INR 1,500/- using Netbanking/ Debit Card/ Credit Card

▶ Finally, click on 'Upload & Submit All Required Documents'. This will allow you to upload one-by-one all the mandatory supporting documents such academic certificates and transcripts, photograph, etc. and complete the application process. Acceptable file formats for uploading these documents are .DOC, .DOCX, .PDF, .ZIP and .JPEG

▶ Upon receipt of your Application Form and all other enclosures, the Admissions Cell will scrutinise them for completeness, accuracy and eligibility

▶ Admission Cell will intimate selected candidates by email within two weeks of submission of application with all supporting documents. The selection status can also be checked by logging in to the Online Application Centre

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DISCLAIMER

Ever since it was declared as a Deemed to be University in 1964, BITS Pilani has been offering higher education programmes in science and technology, and has earned an enviable reputation for its innovations in this sphere. The Work Integrated Learning Programmes (WILP) of BITS Pilani constitutes a unique set of educational offerings for working professionals. These programmes, which BITS began to offer in 1979, have, over the years, evolved along the lines envisaged in the National Policy on Education, 1986.

The WILP are rigorous higher education programmes in technology areas, designed keeping the evolving needs of industry in view, and meant for working professionals in their respective domains. The very intent is to deliver the education at the workplace, in order that the greatest degree of work integration of the education is achieved, and thus the WILP are very distinct in philosophy and pedagogy from open, distance learning programmes. Though it is incorrect and improper, at times the WILP are compared to ODL programmes. Accordingly, it has been our constant endeavor to engage with the regulator, and provide all necessary information about these programmes.

The WILP have been well received, and accepted by industry, because of the high quality of the programmes in terms of the curriculum and the instruction, and also because of the high degree of work integration, which results not only in up gradation of knowledge, but also in up skilling, and productivity increase.

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