



**TILAK MAHARASHTRA VIDYAPEETH, PUNE**

DEPARTMENT OF COMPUTER SCIENCE

# M.SC DATA SCIENCE

## 2 YEARS MASTERS COURSE



# MESSAGE FROM CHANCELLOR & VICE - CHANCELLOR



Dear Students,

TMV is an educational memorial of Lokmanya Bal Gangadhar Tilak, the father Indian unrest and advocate of National Education. Lokmanya Tilak had proposed the four-fold program i.e. Swarajya, Swadeshi, Boycott and National Education.

Lokmanya Tilak was of the firm belief that people must be educated if progress is to be achieved. Hence, he advocated that, Education must be widely spread and directed towards building character, dedication and hard work. He wanted Education in all the disciplines, Traditional, Scientific, Technical, Legal, Medical, Agricultural, Trades etc. The sole aim was to provide a much-needed educational facilities in almost all the faculties of knowledge at the undergraduate, post graduate and research levels.

Today, the TMV (Deemed to be university under parent trust offers various courses. Quality education is provided to students by the professionally qualified and experience faculty. The departments like Administration, Accounts, Examination, Admission Section, publication and Library are centralized and computerized. These departments are well- equipped with ICT facilities. With a team of dedicated staff, Vidyapeeth is all geared up to serve the student community as per the changing educational environment.

The student is the most important person on our campus. We create opportunities and inspire students to achieve their goals. We recognize that in addition to our students' academic pursuits, they lead full, rich lives and need our support.

I encourage you to visit our campus and learn more about the opportunities available to you at Tilak Maharashtra Vidyapeeth Trust.

**-Dr. Deepak J. Tilak**  
*Chancellor , TMV*



Dear Students,

It is my pleasure to address you as the Vice Chancellor of this esteemed institution. As you embark on your educational journey, I would like to take this opportunity to convey a message of encouragement and inspiration.

We are committed to providing you with an education that is not only academically sound but also prepares you to face the challenges of the real world. Our focus is on providing you with a holistic education that encompasses intellectual, social, and emotional growth. We believe that a well-rounded education is the key to success.

As students, you are the future of our nation. It is essential that you take your education seriously and strive to excel in all areas of your academic pursuits. We are here to support you every step of the way and provide you with the resources necessary to achieve your goals.

I encourage you to take advantage of the opportunities available to you, both inside and outside the classroom. Participate in extracurricular activities, engage in community service, and build lasting relationships with your peers and mentors. These experiences will not only enrich your education but also prepare you for life beyond the walls of this institution.

Remember, your education is a journey, and the destination is not just the degree you earn but the person you become. So, embrace this journey with an open mind, a willingness to learn, and a commitment to excellence. The future is yours, and we are excited to see all that you will achieve. Best wishes for a successful and fulfilling educational journey !

**-Dr. Geetali Tilak**  
*Vice Chancellor*

# WHY DATA SCIENCE?

## Data Science: Empowering Today's World, Businesses and Careers

In today's digital era, data is more than just numbers—it's the lifeblood of innovation and strategic decision-making. Data Science unlocks the potential hidden in data, transforming it into actionable insights that power industries, improve lives, and create competitive advantages.

### Empowering the World:

From healthcare and education to finance and agriculture, Data Science is solving real-world problems—predicting disease outbreaks, personalizing learning, preventing fraud, and optimizing crop yields.

### Fueling Business Growth:

Organizations harness data science to understand customers, streamline operations, and drive profits. Predictive models, AI algorithms, and big data analytics help companies stay ahead in a data-driven economy.

### Building Rewarding Careers:

With demand for data professionals soaring, Data Science offers lucrative and intellectually stimulating career paths. Whether as data analysts, machine learning engineers, or AI researchers, professionals are shaping the future across sectors.

Data Science is not just a field—it's a force reshaping how we live, work, and think. Would you like this adapted for a presentation, article, or personal statement?



# CURRICULUM

1

Semester

## Foundations of Data Science & Research

Credits: 22

This semester establishes the fundamental pillars of data science — programming, statistics, databases, and research orientation.

Subjects:

- Python Programming – Introduction to core Python concepts, data structures, libraries like NumPy and Pandas for data analysis. (Credits: 3)
- R Programming for Data Science – Statistical computing and data visualization using R and packages like ggplot2. (Credits: 3)
- Statistics Essentials for Data Science – Basic descriptive and inferential statistics tailored for real-world data problems. (Credits: 3)
- Database Management System for DS – Relational databases, SQL queries, and data management techniques. (Credits: 3)
- Lab Practice-I – Practical assignments and hands-on sessions using Python and R. (Credits: 4)
- Research Methodology – Understanding academic research, hypothesis formulation, and literature review methods. (Credits: 4)
- Skill Enhancement Course (SEC) – Focus on communication, presentation, or digital tools. (Credits: 2)

# Machine Learning, NLP & Visualization

Credits: 22

This semester dives into machine learning, optimization, natural language processing, and data visualization, integrating theory with practice.

## Subjects:

- Machine Learning & Artificial Intelligence – Supervised/unsupervised learning algorithms, introduction to AI systems. (Credits: 3)
- Optimization Techniques – Techniques like linear programming, gradient descent, used in model tuning. (Credits: 3)
- Natural Language Processing (NLP) – Techniques for working with text data: tokenization, stemming, sentiment analysis. (Credits: 3)
- Data Visualization using R / Power BI – Visual storytelling, dashboards, and analytical reports. (Credits: 3)
- Open Elective I – Choose based on domain interest. (Credits: 4)

## Options:

Introduction to Cloud Computing

Business Analytics

- Lab Practice–II – Hands-on practicals aligned with ML, NLP, and visualization tools. (Credits: 4)
- Industry/Conference/MOOC Participation – Engage in real-world learning through internships or conferences. (Credits: 2)

## Specialization, Security & Research Phase I

Credits: 22

Students begin research work while deepening specialization in areas like cybersecurity, IoT, and deep learning.

### Subjects:

- MOOC (Advanced Tech Track) – An online course from top platforms (Coursera, edX, NPTEL) on cutting-edge tech. (Credits: 4)
- Open Elective II & III – Two electives allowing deeper exploration of niche areas. (Credits: 4 + 4)

### Sample Options:

- Advanced Security Management and Cyber Law
- IoT Security
- Deep Learning
- Malware Analysis
- Ethical Hacking
- Risk Assessment & Security Audit
- Distributed Systems and Security – Foundations of distributed computing and secure system design. (Credits: 2)
- Research Project – Phase I – Initial work on the dissertation project, problem identification, and research design. (Credits: 8)

# 4

Semester

## Internship, Project Completion & Industry Skills

Credits: 22

This semester emphasizes professional readiness with a capstone project, internship, and industry-driven MOOC.

Subjects:

- Open Elective IV – Final elective to strengthen industry relevance. (Credits: 4)
  - Options:
    - Software Defined Networks
    - Web Security
    - Network Defense Technologies
- Internship / On-the-Job Training (OJT) – Real-world industry placement to apply acquired skills. (Credits: 4)
- Final Research Project – Complete the dissertation, present findings, and submit a conference-quality paper. (Credits: 12)
- MOOC / Professional Certification (SEC) – Certificate-based learning on topics like Data Ethics, Blockchain, or DevOps. (Credits: 2)

# COURSE HIGHLIGHTS



## Daily Doubt Session

If you encounter any error in your learning journey we are here help to help join our daily doubt session and get your doubt cleared from our expert faculties.

## Industry Relevant Projects

Immerse in our curriculum bridging theory and practice through industry-led projects. Gain invaluable hands-on experience guided by seasoned experts, ensuring real-world relevance for your skill set in the market.



## Practical Solutions for each Assignment

For each assignment, you'll receive detailed solutions to help you evaluate your approach and understanding. These solutions provide insights into effective problem-solving techniques, ensuring you're well-prepared for real-world applications.

## Practice Exercises

Experience our immersive practice exercises, enabling you to deepen your understanding and master concepts effortlessly. Unveil your potential with engaging activities designed to enhance your comprehension in just moments!

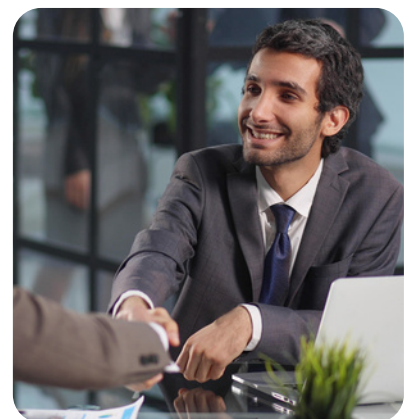


## Profile Building session

Unlock your industry potential! Elevate beyond skills—showcase your expertise! Join exclusive sessions focusing on crafting a standout LinkedIn profile & portfolio. Learn to captivate recruiters and amplify connections. Transform your abilities into opportunities effortlessly. Let's shape your professional journey together!

## Dedicated Interview Preparation

You'll gain access to a dedicated interview preparation course, focused on sharpening your skills for technical and behavioral interviews. This course covers essential strategies, mock interviews, and tips to help you approach interviews with confidence and expertise.

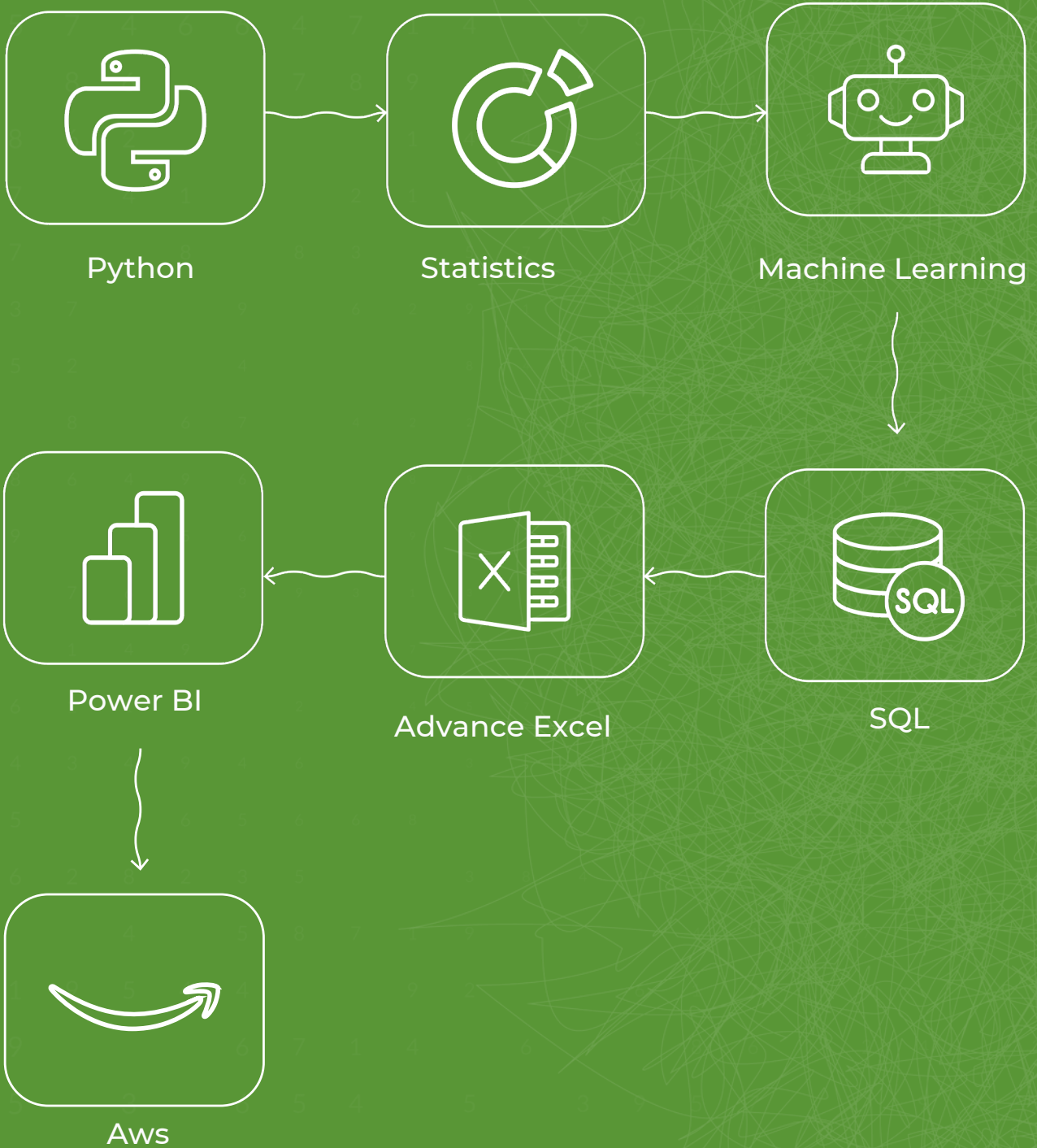


# TOOLS COVERED



mongoDB

# LEARNING PATH



# PROJECTS



## Python Project

*Working on census data of US to analyse, factor influencing the living standard of people living USA.*



## ML Project

*Helping banks to identify potential clients to whom they can sell their products and services.*



## SQL

*Working Airport data to analyse flights data and identify factor which can optimise operations.*



## Power BI

*Working on superstore dataset to analyse and create insightful dashboard which can help business grow.*



## AWS

*Working on airlines data to get data from storage by creating ETL and analysing all in AWS.*

# PROGRAM HIGHLIGHTS



Project Based Learning



Industry Relevant Projects



60-70% Average Salary Hike



Dedicated Placement Assistance



Expert Faculties



Comprehensive Curriculum

# INDUSTRY-ACADEMIA PARTNERS



# ADMISSION DETAILS



## ELIGIBILITY

B.Sc, BBA, B.Com, BCA or Any Graduate



## DURATION

2 Years Masters (Four Semesters)



## INTAKE

30



## CERTIFICATION

TILAK MAHARASHTRA VIDYAPEETH PUNE



## TUITION FEE

₹. 1,80,000/- per Annum (Yearly)

# BANKING LOAN PARTNERS



बैंक ऑफ महाराष्ट्र  
Bank of Maharashtra  
भारत सरकार का उद्यम



Janata Sahakari Bank Ltd., Pune  
Multistate Scheduled Bank



COSMOS CO-OP. BANK LTD.  
(Multistate Scheduled Bank)  
Enriching Life



TILAK  
MAHARASHTRA  
VIDYAPEETH  
PUNE  
(Establishment 1921)

THANK  
YOU.

CONTACT US &  
ENROLL NOW

SCAN HERE FOR REGISTRATION



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