tcs iON

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TCS iON **Honors/Minor** Degree & Certificate Courses for **Visvesvaraya Technological University (VTU) students**

Our dynamic approach to education ensures your students experience learning through real-world challenges, industry projects, and remote internships to gain hands-on skills. We also help pave their way to professional success with comprehensive job assistance from **3000+ corporates.**

Scan the QR code to get Expert advice on course selection

FREE access to explore 500+ careers

The realm of work is swiftly progressing, demanding students acquire industry-specific training alongside their regular curriculum. The need of the hour is to offer education that aligns with academic courses and provides certified proof of students' proficiency in various industries.
To assist students in harmonizing their academic pursuits and career aspirations, TCS iON has introduced TCS iON courses that empowers students to acquire hands-on, niche skills, and valuable industry certifications, so that they can unlock numerous internship and job opportunities for themselves.

Key advantages of joining Minor, Honors, Certification Courses offered by TCS iON:

Digital Lectures:
Designed and delivered by experts from industry and academia (from IIT/IIM etc.)

Digital Learning Resources:
Access to enriching self-paced e-learning content

Discussion Room:
Moderated and mentored by industry and academic experts

Industry Assignments:
Includes hands-on, industry curated near live projects as a part of the course

Periodic Formative Assessments:
Three assessments throughout the course duration

Verifiable Digital Certificate:
Certificate with a digital scorecard upon completion

Internship Opportunity:
Remote Internships during the pre-final year

Job Opportunity*:
On completion of Minor/Honors Degree, and Certification Courses - access to job opportunities from 3000+ corporates through TCS iON Job Portal

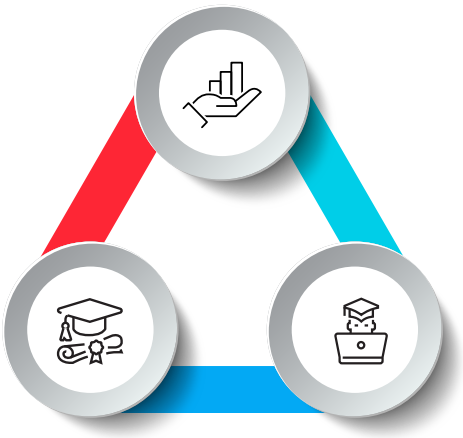
*Note: Subject to vacancies in corporates and their hiring policies.

TCS iON Honors/Minor Degree Specialization for VTU Students:

Transform your regular degree program into an Honors /Minor degree specialization by taking TCS iON Courses.

TCS iON is offering 13 Degree programs with 18 additional credits for Minor and Honour each across technical and non-technical domains for your students to select.

Minor Degree provides an opportunity to your students to pursue an allied academic interest in an interdisciplinary field to become employable in diverse fields. Students with minimum **5 CGPA** with permissible backlogs until 3rd semester are eligible*.



Honors Degree enables students to acquire advance skills in their core domain to be more employable in their fields. Students with minimum **7.5 CGPA** at the end of 4th semester are eligible*

Certification Courses Offered by TCS iON:

TCS iON is offering 60 individual certification courses across technical and non-technical domains for your students to select.

Students earn 06 credits in emerging areas with hands-on skills taught by experts from industry and academia.

*Students who are not eligible for Minor and Honour course including your **Alumni** can also enrol into certification courses and enhance their skills.

**Please refer to VTU notifications for detailed eligibility criteria.*

Ethereum and Smart Contracts - DApps Development

Ethereum and Smart Contracts - DApps Development is a course that provides a foundation in the general and advanced concepts related to blockchain, cryptography, smart contracts, and developer tools, particularly with regards to the ethereum platform. The course is designed as per the latest industry trends and equips students with the knowledge and skills that enable them to develop smart contracts (deterministic programs) and decentralized applications (DApps). Application of blockchain to different industry challenges and use cases will demonstrate the practical and exponential potential of this exciting technology to create value.

Mode: Recorded + Live Doubt Clearing Sessions

Potential Career Path

- Senior Developer
- Junior Developer
- Tech Analyst
- Tech Lead
- Consultant
- Architect

Recommended For

Graduation Programme - **B.E./B.Tech**
Branch - Computer Science Engineering and Information Technology, Electronics and Communication Engineering

Note: Students interested in DApps from any graduation degree can opt as certification programme.

Industries with demand in DApps for next 5 years

Finance & Banking	Blockchain Development Sectors	IT & Technology
Supply Chain Management	Research & Development	Healthcare

Syllabus – Main Topics

1. **Review of Blockchain Technology**
2. **Blockchain Primitives**
3. **Ethereum Basics**
4. **Development Frameworks and Environment**
5. **Smart Contract Fundamentals**
6. **Writing Smart Contracts**
7. **Introduction to Ethereum Name Services**
8. **Deploying Ethereum Blockchain using Web3**
9. **Smart Contracts Pitfalls, Testing and Debugging**
10. **Use Cases**
11. **Other Blockchain/Distributed Ledger Technology (DLT) Platforms**

Recommended Prior Knowledge

1. Experience in Object-oriented programming (OOP)
2. Knowledge of JavaScript, HTML, Git and Web Development
3. Basic knowledge of Cryptography, Data Structures and Algorithms

Top recommended courses for you

Sr.No	Course Name	Domain	Recommended For	Course Summary
01	Advanced Cyber Security - An Application Approach	Cyber Security	Computer Science, Information Technology, Electronics and Communication, Electronics	This course helps to understand application security, secure Software Development Life Cycle (SDLC) and the need for implementing security in every SDLC phase. Students will gain hands-on experience by implementing industry assignment through an integrated virtual hands-on environment.
02	Application of Deep Learning and Neural Networks	Applicable for all	Computer Science, Information Technology, Electronics and Communication, Electronics	This course teaches the basic and advanced concepts of Deep Learning and Neural Networks supported by industry relevant business case studies using an integrated Python based programming environment.
03	Applied Cloud Computing	Cloud Computing	Computer Science, Information Technology, Electronics and Communication, Electronics, Mechanical	This course is designed to understand cloud computing and learn to store, manage, process, share and collaborate on data and information with high speed and accuracy.
04	Applied Cryptography	Cyber Security	Computer Science Engineering and Information Technology, Electronics Engineering, Mechanical Engineering, Electrical Engineering, MBA any Stream, Science and Mathematics Graduates	This course takes a look at the design and usage of various Cryptographic techniques used to solve practical security challenges. Students will have the ability to judge, use appropriate methods and correctly implement Cryptographic algorithms for achieving different security goals.
05	Artificial Intelligence for Real-World Application	Artificial Intelligence	Applicable for all	This course helps to understand various concepts of Artificial Intelligence (AI), Machine Learning (ML), Deep Learning (DL), TensorFlow and Natural Language Processing (NLP).
06	Augmented Reality Development and its Applications	Mixed Reality	Computer and Electrical Sciences, including Computer Science and Engineering, Electrical and Electronics Communication Engineering, Electrical Engineering, Mathematics and Computing	This course provides a detailed understanding of the concepts of AR and development of AR apps for different use cases, particularly with regards to Spark, Unity and Blender platforms.
07	Basic Econometrics	Fintech	Applicable for all	It is a fundamental course for aspiring economists, data scientists and financial analysts and even be useful for engineering sciences, biological sciences, medical sciences, geosciences, agricultural sciences, etc.
08	Big Data Analytics - Advanced	Big Data	Computer Science Engineering and Information Technology, Electronics and Communication Engineering, Mechanical Engineering	Big Data Analytics - Advanced course will provide the understanding of data analytics concepts, hands-on training on various tools and frameworks in data analytics, experience in developing real-world applications and deploying them in public cloud.
09	Big Data On Cloud	Data Science	Computer Science, Information Technology, Electronics and Communication, Electronics	Designed as per latest industry trends, this course provides a foundation and advanced concepts related to data extraction, in-memory computation, processing data in motion, designing data models, building data lakes, automating data pipelines, visualising data and deriving insights.

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10	Blockchain in Fintech	Blockchain	Computer and Electrical Sciences, Computer Science and Engineering, Electrical and Electronics Communication Engineering, Electrical Engineering, Mathematics and Computing	This course will cover a wide spectrum of Blockchain-based system design and development, starting from their foundations. This course allows students to not only understand the impact of technology in the Finance domain but also many of the Blockchain Concepts.
11	Cloud Architecture	Cloud Computing	Computer Science Engineering and Information Technology, Electronics and Communication Engineering, Mechanical Engineering	This course covers critical aspect of Cloud Architecture with understanding of Compute solution, Virtualization, Cloud Computing Stack, Service Models (XaaS) and Deployment Models, Virtual Private Cloud (VPC), Cloud Load Balancing and Auto scaling, Caching and in-memory data store, Cloud Design Patterns, Other paas services, etc. It will help students stay updated on the latest Cloud Architecture industry trends and practices by accessing resources powered research and experience of subject matter experts from academia and industry.
12	Cloud Development	Cloud Computing	Computer Science Engineering and Information Technology, Electronics and Communication Engineering, Mechanical Engineering	This course introduces students to different application development in cloud with solutions in core system level or in application level. It will cover a wide range of Cloud System Design and Development topics starting with their fundamentals.
13	Conversational Experiences	Artificial Intelligence	Computer Science, Information Technology, Electronics and Communication, Mechanical, Electronics	This course aims to provide knowledge on chatbots, Machine Learning (ML) concepts and algorithms to build custom ML models to facilitate better understanding and create better customer experiences.
14	Data Analysis using Excel	Data Science	Computer Science Engineering and Information Technology, Electronics and Communication Engineering, Mechanical Engineering	Data Analysis with Excel is a course that will help students gain knowledge and develop skills on Data Analytics and Microsoft Excel software to understand the importance of the software and apply the same in solving analytics problems and generating insights for business decisions.
15	Data Analytics and Reporting	Data Science	Applicable for all	This course introduces students to data, data preprocessing, tools and techniques to analyse data properties, extract relevant information from data and use different ways of reporting data.
16	Data Mining and Warehousing	Data Science	Applicable for all	This course teaches students how to use data mining tools and techniques, such data can be effectively used to detect meaningful patterns and extract useful information from them.
17	Data Modeling and Visualization	Data Science	Applicable for all	This course provides the basic framework for performing data analysis using some fundamental data modeling and data visualization techniques. Using R as a programming language, students will implement industry assignments to gain experience in framing a basic comprehensive solution to a data analysis problem in a structured framework leveraging an integrated virtual environment.
18	Ethereum and Smart Contracts - DApps Development	Blockchain	Computer Science, Information Technology, Electronics and Communication, Electronics	This course covers the basic and advanced concepts of blockchain, cryptography, smart contracts and Ethereum development tools supported by industry use cases to demonstrate the application of blockchain to different industry challenges.

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19	Fintech Primer	Fintech	Branch - Engineering (CS, Electronics, Electrical, Mechanical)/MBA (Any Stream)/Science and Mathematics Graduates & Post Graduates/Economics and Commerce Graduates with Technical courses	Fintech Primer is a course that covers critical aspects of Fintech along with the understanding of prominent technologies such as API, Blockchain, AI, Machine Learning, RPA, IoT, Big Data and Data Analytics, Cyber Security, and more.
20	Full stack Development	Data Science	Computer Science, Information Technology, Electronics and Communication, Mechanical	Full Stack Development covers all layers in the developer's preferred stack such as Front-end Web Developer, Front-end Web Designer and MEAN Stack Developer.
21	Information Security - Practitioner's Perspective	Cyber Security	Computer Science, Information Technology, Electronics and Communication, Electronics	In this course, students will learn and demonstrate their ability to identify computer and network security threats, classify the threats, and develop a security model to prevent, detect, and recover from attacks.
22	Innovation and Entrepreneurship	General	Applicable for all	This course helps students to develop entrepreneurial skills by introducing them to systematic, scientific and an easy process of testing ideas and opportunities that they envision using Lean Canvas.
23	Intelligent Game Design and its Applications	Game Design	Applicable for all	This course is designed to teach students the principles followed in the mechanics of game design, genres of games, serious games and their industrial application, and role of different technologies such as AR, VR and AI in game development.
24	IoT and its Applications using Raspberry Pi	Internet of Things (IoT)	Applicable for all	This course provides practical knowledge on using the Raspberry Pi microcontroller along with a variety of sensors to design and develop IoT-based solutions. It familiarises students with sensor interfacing, data communication for connecting with the server backend through various interfaces, protocols and data analysis on cloud platforms
25	IoT Application Development on Cloud	Internet of Things (IoT)	Applicable for all	This course covers the development of IoT products and services such as device management, data management and analytics, network and communication protocols and cloud platforms like AWS and Azure.
26	Machine Learning for Real-World Application	Artificial Intelligence	Applicable for all	This course covers the basic and advanced concepts of Machine Learning supported by industry relevant business case studies using an integrated Python programming environment.
27	Practical Approach to Cyber Security	Cyber Security	Computer Science, Information Technology, Electronics and Communication, Electronics, Electronics & Instrumentation	This course covers the basics of common cyber attacks, their defences, cyber security trends, security- related industry best practices and helps students to learn protective measures against cyber threats and enhance their proficiency in cyber security.

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28	Practical Approach to Data Mining and Analytics	Data Science	Applicable for all	This course lays the foundation for the basic and advanced concepts of data mining and data analytics supported with latest industry relevant business case studies through an integrated hands-on environment.
29	Reinforcement Learning	Artificial Intelligence	Computer Science Engineering, Information Technology	Reinforcement Learning is a course that provides the methods and procedures to solve very complex problems, which cannot be solved by conventional techniques. This course is useful for those interested in learning Artificial Intelligence using Reinforcement Learning methods.
30	RPA - Developer Foundation	Automation	Electronics and Communication, Computer Science, Information Technology, Electrical	This course introduces students to an industrial viewpoint of RPA that helps to automate manual processes. This course covers in detail the use and functionality of Robotic Process Automation (RPA) in business prospects.
31	RPA in Fintech	Fintech	Computer Science Engineering and Information Technology, Electronics and Communication Engineering, Mechanical Engineering	The course RPA in Fintech is an advanced elective, designed to help you learn the applications of Robotic Process Automation (RPA) in financial technologies services in the real world.
32	Social Media and Text Analytics	Data Science	Computer Science, Information Technology	This course aims to provide a fundamental training on modern text processing technologies such as topic modeling and clustering and its real-world application supported with industry relevant real-life problems and data using an integrated Python programming virtual environment.
33	Statistics with R and Python	Data Science	Computer Science, Information Technology, Electronics and Communication, Electronics	The course provides a deep understanding of the basic concepts of statistics from the applications point of view, implementation of statistical concepts in python programming and using R programming.
34	Usability Design of Software Applications	User Interface Design	Computer Science, Information Technology, Electronics and Communication, Electronics	This course teaches students how to create user-friendly software applications by incorporating the principles of smart design and user experience design.
35	Virtual Reality Development and its Applications	Mixed Reality	Computer Science, Information Technology, Electronics and Communication, Mechanical, Electronics	This course provides a detailed understanding on the concepts of Virtual Reality (VR), knowledge and skills required to build and develop VR applications for different use cases particularly with regards to Unity and Blender platforms.
36	Vision Intelligence and Machine Learning	Artificial Intelligence	Computer Science, Information Technology, Electronics and Communications	Vision Intelligence and Machine Learning is a course that provides insights into fundamental concepts and algorithms in computer vision and applications of machine learning in visual intelligence. This is a useful course for practitioners of computer vision applications in real-world scenarios.

About TCS iON

TCS iON is focused on empowering people and organizations with tech-led education to transform themselves for the new world. It uses uniquely built 'Phygital' platforms that overlay digital technologies over physical assets. For recruitment boards, corporate entities, and education institutions, TCS iON offers a range of interventions that reimagine and transform all the key processes. For individual learners, it offers a plethora of multi-modal learning courses imparting varied range of skills and proficiencies. With all this, TCS iON serves every stakeholder in the education domain: school students, schools, education boards, youth, colleges, universities, skilling institutes, working professionals, corporate entities and recruiting organizations.

For more information, visit us at www.tcsion.com

For further inquiries, please contact us at enquiry.tcsion@tcs.com

About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that has been partnering with many of the world's largest businesses in their transformation journeys for over 50 years. TCS offers a consulting-led, cognitive powered, integrated portfolio of business, technology and engineering services and solutions. This is delivered through its unique Location Independent Agile™ delivery model, recognized as a benchmark of excellence in software development.

A part of the Tata group, India's largest multinational business group, TCS has over 606,000 of the world's best-trained consultants in 55 countries. The company generated consolidated revenues of US $25.7 billion in the fiscal year ended March 31, 2022, and is listed on the BSE (formerly Bombay Stock Exchange) and the NSE (National Stock Exchange) in India. TCS' proactive stance on climate change and award-winning work with communities across the world have earned it a place in leading sustainability indices such as the MSCI Global Sustainability Index and the FTSE4Good Emerging Index.

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