



IIT ROORKEE



ADVANCED CERTIFICATE PROGRAM IN FULL STACK SOFTWARE DEVELOPMENT

10 months | Online Live Classes
+ Recorded Lectures

THE FUTURE OF SOFTWARE ENGINEERING



3 MN JOBS TO BE ADDED BY 2025

The Indian IT/ITeS Industry added 1.4 Lakh jobs in 2020 and will continue to add around 3 million jobs by 2025.

Source : NASSCOM

TOP 10 EMERGING JOBS IN INDIA

Full Stack Developers, Back-end developers, and JavaScript developers are listed in the Top 10 Emerging Jobs by LinkedIn India.

Source : LinkedIn Emerging Jobs 2020

HIGHLY REWARDING CAREERS

Average starting salary for Full Stack Developers starts at 6-9 LPA and increases based on experience

Source : Cutshort.IO Salary Insights

#1 RANKED - FULL STACK DEVELOPER

Full Stack Developers are the most in-demand Software Developers followed by Back end Developers and Front end developers.

Source : Hackerrank Developer Skills Report, 2020

PROGRAM INTRODUCTION



The increasing adoption of digital products has enabled the penetration of web & software technologies. With a wider range of platforms - Desktop, Web, Mobile, AR/VR, etc., the scope for software development is only going to increase. With development costs dropping, many non-tech companies are becoming tech-savvy which would lead to a future where every company will be a tech company on some level. The Indian IT/ITeS Industry has shown phenomenal growth in the last decade contributing to the Digital India initiative and is poised to grow up to USD 350 million by 2025, creating 3 million+ jobs in the process.

The software industry initially focused on hiring & training super specialised personnel such as front-end developers, back-end developers, database engineers, testers, site reliability engineers, etc. who worked

on specific aspects of the software development life cycle (SDLC). The emergence of multiple frameworks, tools, and libraries has encouraged companies to hire Full Stack Developers who can handle end-to-end development of software applications in addition to testing, building, and deploying applications on the cloud.

While we have around 6 lakh engineering students who graduate every year, NASSCOM reveals that only around 25% of these graduates are employable by IT/ITeS Companies. This puts India in a unique talent paradox. We have a multitude of engineering graduates but a limited pool of qualified engineers in Computer science and programming, resulting in companies struggling to meet their talent supply needs.

To address this digital skill gap and build the next generation of Full Stack Software developers, EICT IIT Roorkee in collaboration with Great Learning has launched the **Advanced Certificate Program in Full Stack Software Development**. This program is focused on building essential software development skills among learners to make them productive and reliable software developers which shall open new opportunities for them.

Learners will learn by solving real-world problems which will require planning, design, coding, code reviews, and testing with periodic and constant support from Faculty and industry experts via live sessions and webinars. Participants will also receive extensive career support and placement assistance from Great Learning to crack their next dream job in tech.

SPECIALIZATION

Learners have the opportunity to specialize in one of the two emerging technologies below to augment their skill set and target multiple job roles.

CLOUD COMPUTING

- Foundations
- AWS Core & Advanced
- DevOps on AWS, etc.

PYTHON FOR DATA SCIENCE

- Exploratory Data Analysis
- Supervised Learning
- Unsupervised Learning, etc.



ABOUT IIT ROORKEE



Indian Institute of Technology - Roorkee is among the foremost institutes of national importance in higher technological education and in engineering, basic and applied research. The Institute ranks amongst the best technological institutions in the world and has contributed to all sectors of technological development. It has also been considered a trend-setter in the area of education and research in the field of science, technology, and engineering.

ABOUT E&ICT ACADEMY



Electronics & ICT Academy IIT Roorkee (E&ICT IITR) is an initiative supported by MeitY, Govt of India. EICT IIT Roorkee delivers FDPs and certification courses in online as well as offline mode. Our courses lay emphasis on bridging the gap between industry demand and academic approach to learning and provide a foundation to build your career in the industries related to the ICT sector. All our courses have projects with real-life problems to give industry insights into learning. We have assimilated academic as well as industry experts to formulate the most effective courses that help professionals, students and faculty to upgrade their skills without disrupting their regular schedule.

ACHIEVEMENTS



In Engineering
Category of NIRF
Rankings 2020



In Overall Category of
NIRF Rankings 2020



Among the IITs in the
'Citations per Faculty'
parameter in QS World
University Rankings, 2021



Best university in India
by the Times Higher
Education (THE) World
University Rankings 2019

ABOUT GREAT LEARNING



Great Learning is one of India's leading ed-tech companies for professional and higher education. It offers comprehensive, industry-relevant programs in **Software Engineering, Business Management, Business Analytics, Data Science, Machine Learning, Artificial Intelligence, Cloud Computing, Cyber Security, Digital Marketing, Design Thinking**, and more.

Great Learning's programs are developed in collaboration with the world's foremost academic institutions like **Stanford University, The University of Texas at Austin, MIT Professional Education, Northwestern University, Indian Institute of Technology, Madras (IIT Madras), International Institute of Information Technology Hyderabad (IIIT Hyderabad), People's Education Society University, Bengaluru (PES University, Bengaluru) and Great Lakes Institute of Management** and are constantly reimagined and revamped to address the dynamic needs of the industry.

➤ 1 MILLION+ REGISTERED LEARNERS

➤ #1 RANKED PROGRAMS

➤ 2000+ INDUSTRY EXPERTS

➤ 500+ CORPORATE PARTNERS

➤ >4.5/5.0 LEARNER RATING

➤ 90%+ COMPLETION RATE



Best E-Learning Company of the Year 2020

PROGRAM HIGHLIGHTS



10-MONTH
PROGRAM WITH
300+
LEARNING HOURS



LEARN FROM THE BEST

Live classes & recorded lectures with IIT Roorkee faculty and Industry experts with dedicated program support



BUILD APPLICATIONS

Work on 10+ Projects
& Assignments



DEDICATED CAREER ASSISTANCE

Get exclusive access to
500+ top hiring companies

WHO IS THIS PROGRAM FOR?

- Students and early career working professionals who want to build cutting edge web applications and kick start their software development career.
- Software development professionals working as backend developers, front end developers, software & system analysts, IT professionals, etc who wish to acquire expertise in Full Stack Software Development.
- Professionals looking to transition into software development roles from non-development IT roles such as testing, support and quality analyst, etc.
- Professionals looking to kickstart their career in software development roles from non-technical roles.
- Students and working professionals who would like to specialize in cloud computing, Python for data science to build a wide arsenal of skill sets and work on emerging technologies.



PROGRAM OUTCOMES

POST SUCCESSFUL COMPLETION OF THIS PROGRAM, YOU WILL

- Become proficient in building end-to-end web applications handling all the areas of the tech-stack
 - Become ready to kickstart your tech career in top IT companies
 - Become an ideal candidate for early-career tech roles such as Full Stack Developer, Back end Developer, Front end developer, Software Engineer, Software Developer, etc.
 - Based on the specialization chosen, you can also target emerging tech job roles as mentioned below
- CLOUD COMPUTING** : AWS Cloud Engineer, Cloud Devops Engineer, Cloud Developer, etc.
- PYTHON FOR DATA SCIENCE** : Data Analyst, Business Analyst, Data Scientist, etc.

CERTIFICATE

Upon successful completion of this program, you will receive a Certificate of Completion from E&ICT Academy, IIT Roorkee.



*The curriculum is subject to change based on industry trends and inputs from IIT Roorkee faculty.



COURSE - PREWORK

INTRODUCTION TO PROGRAMMING

- Program structure & basic principles
- Programming constructs - loops, functions, arrays, etc.
- An introduction to version control, Git, command-line scripting
- Basic HTML, CSS

COURSE - BACK END SOFTWARE DEVELOPMENT

OBJECT-ORIENTED PROGRAMMING

- Object-Oriented paradigms of Java Programming (Classes, Objects etc.)
- Object-Oriented Design
- Exception Handling, Collections, Concurrency, etc.

DATA STRUCTURES

- Linear Data Structures (Arrays, Strings, Stacks, Queues, Linked Lists, etc.)
- Binary Trees and Binary Search Trees, Tree traversals



ALGORITHMS

- Basic Algorithms: Recursion, Searching and Sorting Algorithms, Greedy Algorithms
- Analysis of Algorithms and Evaluating the right algorithm for a problem
- Advanced algorithms – Graphs, Dynamic Programming, Hashing Algorithms

DATABASE DESIGN & SYSTEMS

- Processing, storing & organizing data: data models, ETL
- Tables, views, SQL queries - simple & complex
- Database schemas, normalization, keys, indexes
- JDBC
- Introduction to NoSQL databases

SERVER-SIDE DEVELOPMENT & FRAMEWORKS

- Spring MVC Architecture
- Backend development using Springboot framework
- ORM & Hibernate
- REST APIs

COURSE - FRONT END SOFTWARE DEVELOPMENT

FRONT-END DEVELOPMENT - HTML & CSS

- HTML & CSS interaction, CSS : styling, selectors, box model, border, margin, padding, etc

FRONT-END DEVELOPMENT - JAVASCRIPT

- JavaScript Fundamentals, Hoisting, Callbacks, Promises, Asynchronous JavaScript, DOM Manipulation, JSON, AJAX Calls, Communication with Server, Event Listeners, Local and Session Storage etc.
- Advanced JavaScript -ES6, Let & Const, Arrow Functions, Array Destructuring, Async/Await, Babel, Webpack, etc

JAVASCRIPT FRAMEWORKS - REACT (SELF-STUDY)

- React Introduction, React Router, components and Single Page applications
- React forms, flow architecture
- Redux & Client-Server Communication, etc

COURSE - SPECIALIZATION IN CLOUD COMPUTING

LINUX ESSENTIALS

- Linux OS
- File Structure
- Command Line Ops
- Linux Distro's & Usage
- Basic Shell Scripting

PYTHON ESSENTIALS

- Language Basics
- Python Scripting
- Using AWS Python SDK

CLOUD FOUNDATIONS

- Service Models
- Deployment Models
- Virtual Machines vs Containers
- Why Cloud
- Traditional vs Cloud Infra
- Cloud Platforms

CONTAINERS

- Container Basics
- System Containers (LXD)
- Application Containers (Docker)
- Container Orchestration & Management

AWS CORE

- AWS Organization & IAM
- Compute
- Storage
- Network

AWS ADVANCED

- Database Services (RDS, DynamoDB)
- PaaS - Elastic Beanstalk
- CaaS - Elastic Container Service
- Monitoring & Logging - AWS CloudWatch, CloudTrail
- Notifications - SNS, SES
- Billing & Account Management

DEVOPS ON AWS

- Continuous Integration and Continuous Deployment
- Deployment Pipeline(e.g. AWS CodePipeline, CodeCommit, CodeBuild, CodeDeploy)
- Plan, Build, Deploy and Monitor (CloudFormation)
- Infrastructure as Code (Terraform, CloudFormation)



COURSE - SPECIALIZATION IN PYTHON FOR DATA SCIENCE

PYTHON FOR DATA SCIENCE

- Numpy
- Pandas
- Matplotlib

SQL PROGRAMMING

- Introduction to DBMS
- Subqueries and Joins
- Functions, Operations, Grouping & Filtering, etc.

EXPLORATORY DATA ANALYSIS

- Data Cleaning
- Data Preprocessing
- Feature Engineering

SUPERVISED LEARNING

- Predictive Modelling- Linear Regression

- Predictive modelling- Logistic Regression
- Popular supervised ML Algorithms
- Naive Bayes
- K-Nearest Neighbor
- Support Vector Machine
- Decision Tree

UNSUPERVISED LEARNING

- Introduction to Clustering
- K Means Clustering
- Silhouette coefficient for K means
- Visual Analysis of clustering

APPLICATIONS (SELF STUDY)

- Time Series
- Text Mining

TOOLS COVERED



AND MORE



FACULTY AND MENTORS



Prof. R. Balasubramanian

CSE Department, IIT Roorkee

Prof. Balasubramanian Raman is a Professor in the Department of Computer Science and Engineering at IIT Roorkee and has been associated since 2004. His research focus is in the areas of Computer Vision, Graphics and Image Processing, etc.



Prof. Partha Pratim Roy

CSE Department, IIT Roorkee

Prof. Partha Pratim Roy is an Associate Professor in the Department of Computer Science and Engineering at IIT Roorkee and has been associated since 2014. His research focus is in the areas of Computer Vision, Machine Learning and Deep Learning, etc.



Prof. Sanjeev Manhas

ECE Department, IIT Roorkee

Prof. Sanjeev Manhas is a Professor in the Department of Electronics and Communications Engineering at IIT Roorkee and has been associated since 2008. His research interests are the areas of Nanoscale Devices and Circuits, Semiconductor Memories, ML and In-memory Computing, IoT, and Sensors.

FACULTY AND MENTORS



Prof. Abhinanda Sarkar

Academic Director, Great Learning

Dr. Abhinanda Sarkar has a degree in B.Stat. and M.Stat. from the Indian Statistical Institute (ISI) and a Ph.D. in Statistics from Stanford University. He is currently adjunct or visiting faculty at Stanford, ISI Delhi, IIM-B and IISC. After working in the research teams at MIT and IBM, he spent a decade at General Electric in Bangalore. At Great Learning, Dr Sarkar is the Academic Director wherein he ensures academic rigour and quality for all programs offered through Great Learning.



Nirmallya Mukherjee

Academic Director, Cloud Computing

With over two and half decades of cross domain experience in IT and ITES across both services and products, Nirmallya Mukherjee has served as Chief Architect at Dell, Principal Architect at Infosys and Technical Architect at Ciber Inc, an HTC Global Services company. He lends his expertise to various multinationals like Cisco, Walmart Labs, Amadeus, Mercedes Benz, ANZ, Societe Generale etc. through his consulting, development and training.



Prof. Mukesh Rao

Faculty, Great Learning

Prof. Mukesh Rao is an Adjunct Faculty at Great Learning for Big Data and Machine Learning. Mukesh has over 20 years of industry experience in Market Research, Project Management, and Data Science. Mukesh has conducted over 100 corporate trainings in the areas of Data Science, Big data, etc.

GL EXCELERATE

Great Learning offers an exhaustive and well-rounded career services platform for all program participants. We have 500+ companies as hiring partners, and have transformed the careers of 8000+ participants. That's why the career services platform offered by Great Learning has been benchmarked as the best in executive education.



e-Portfolio & Resume Building Sessions

An e-portfolio is a snapshot of all the projects done and skills acquired during the program that is shareable across social media channels. We also help you build your resume to highlight your software engineering skill-set along with your previous professional experience.



Great Learning Job Board

The program provides candidates access to the Great Learning Job Board. 500+ organizations approach us with 150+ job opportunities monthly which are shared through the job board with our candidates. We've seen over 8000+ alumni transition to the careers of their choice, with an average salary hike of 48%.



Excelerate Career Fair

To connect our students to industry opportunities, we conduct regular career fairs in various cities and online. These fairs are attended by a selection of our 500+ hiring partners such as Accenture, HSBC, UST-Global, Rakuten, Myntra, DXC Technologies, Tredence, Brillio, TheMath Company, AB InBev etc.



Personal Career Coach

Get access to career mentoring depending upon your experience in the industry with a personal career coach. The coaches are either from the software industry or have transitioned to software roles, so candidates benefit from their guidance on how to move ahead in their careers.



SOME TOP COMPANIES THAT HIRE⁷ GREAT LEARNING LEARNERS



+500 MORE COMPANIES

ADMISSION PROCESS⁷

STEP 1

Register your interest by filling in the online application form for the program.

STEP 2

Shortlisted candidates will be required to go through a screening interview with the Great Learning Program Admission Director's office.

STEP 3

Selected candidates will be provided with an offer of admission to the program. Candidates are required to pay the admission fee to secure their seat.

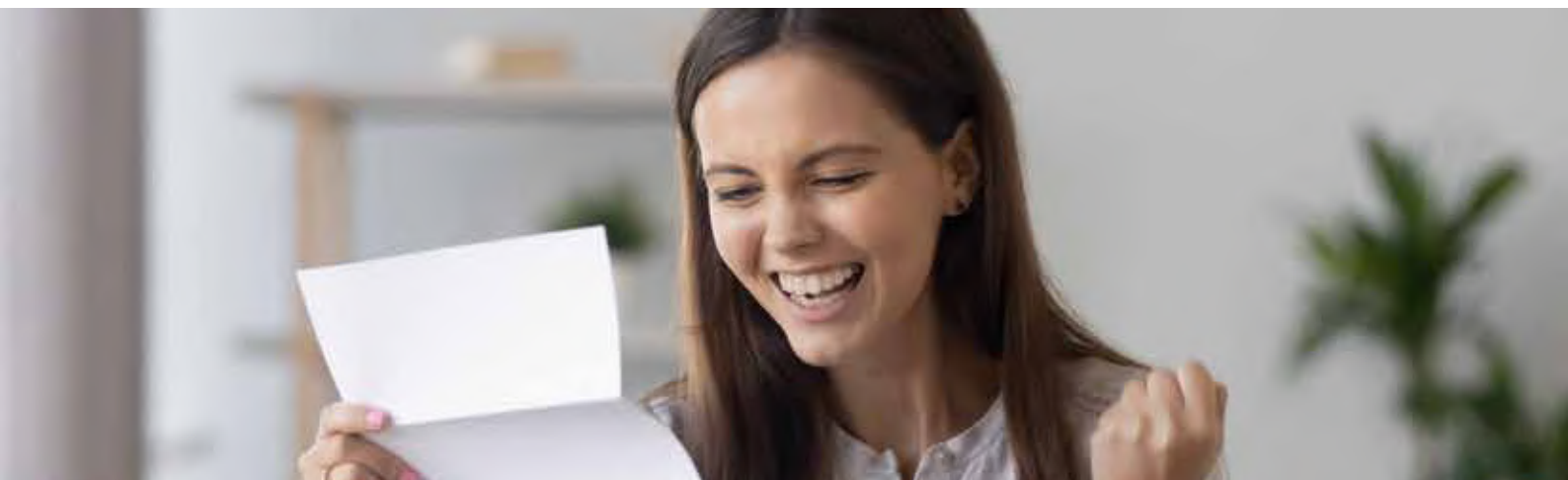
Eligibility

- Applicants should have 50% or above in Xth, XIIth.
- No Programming experience is required.
- This program is suitable for both fresh graduates and professionals with experience.
- College students that are due to graduate within the next 12-18 months are also encouraged to apply.

FEES⁷

₹ 2,00,000 + GST

Learning is now made easy with financing options at 0% interest rate, 0% processing fee and longer tenure of up to 60 months. EMIs for the program start at Rs. 4073. Please contact the admissions office for more details.





START LEARNING TODAY

ADVANCED CERTIFICATE PROGRAM IN FULL STACK SOFTWARE DEVELOPMENT



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