



## Program Catalog Page: Full Stack Software Engineering (FullStk)

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### Program Overview

- **Program Main Code Name:** FullStk
- **Program Code:** FullStk
- **Program Length:** 24 Weeks (6 Months)
- **Total Contact Hours:** 288 Hours
- **Total Credit Hours:** 11.5 Credits
- **Delivery Method:** In-person Live Instructor-Led, Virtual Live Instructor-Led, or 1-on-1 Personalized Mentorship

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### Admissions Requirements

- High school diploma or GED
- Minimum age of 18 years (Applicants under 18 require parental consent)
- Basic computer literacy and familiarity with web browsing
- Successful NVIT Admissions Interview

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### Program Description

The **Full Stack Software Engineering (FullStk)** program prepares students to become proficient full-stack developers capable of designing, building, deploying, and maintaining scalable web

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applications. Students master front-end and back-end development, APIs, databases, DevOps, cloud deployment, microservices, and system-level programming fundamentals.

Graduates will:

- Build full-stack web applications using React, Python, and modern frameworks
- Design, build, and consume APIs (REST and GraphQL)
- Deploy and manage cloud-hosted applications
- Integrate DevOps principles and automation pipelines
- Develop microservices and containerized solutions using Docker

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### Course Description

This course prepares individuals for roles such as:

- Full-Stack Developer
- Backend Engineer
- Cloud Application Developer
- DevOps Engineer
- Software Development Engineer (SDE)

Students learn to:

- Design responsive front-end applications
- Build RESTful and GraphQL APIs
- Deploy applications to cloud platforms
- Automate software development workflows using DevOps techniques

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### Occupations for Which Training Will Be Provided

- Full-Stack Developer
- Frontend Developer
- Backend Developer
- Cloud Application Developer
- DevOps Engineer

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### Work Settings for Program Graduates

- Technology startups
- Cloud service companies
- Consulting firms
- SaaS (Software as a Service) businesses
- E-commerce and digital agencies

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### Instructional Components

Instructional Component	Hours
Live Lectures + Live Proctored Exams	63 Hours
Labs & Projects	153 Hours
On-the-Job Training (OJT) + Capstone Project	72 Hours

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Instructional Component	Hours
<b>Total Contact Hours</b>	<b>288 Hours</b>
<b>Total Credit Hours</b>	<b>11.5 Credits</b>

### Course Outline

Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
FullStk 101	Web Development Fundamentals	6	18	0	24	1.0
FullStk 102	Front-End Development with ReactJS	6	18	0	24	1.0
FullStk 103	Backend Development with Python	6	18	0	24	1.0
FullStk 104	Databases and ORM Integration	6	18	0	24	1.0
FullStk 105	API Development & Integration	6	18	0	24	1.0
FullStk 106	DevOps and Cloud Deployment	6	18	0	24	1.0

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Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
FullStk 107	Microservices Architecture	6	18	0	24	1.0
FullStk 108	C++ or Rust Fundamentals	6	18	0	24	1.0
FullStk 109	Advanced Backend Systems	6	18	0	24	1.0
FullStk 110	Capstone Project and Final Showcase	0	0	72	72	2.5

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### Subject Descriptions

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#### FullStk 101 – Web Development Fundamentals

(Weeks 1–2 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Build foundational websites using HTML5, CSS3, and JavaScript.
- Apply responsive web design principles for mobile-first development.
- Understand the Document Object Model (DOM) for dynamic content rendering.

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**Prerequisite:** Basic computer literacy

**Tools:** HTML, CSS, JavaScript, VS Code

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### **FullStk 102 – Front-End Development with ReactJS**

(Weeks 3–4 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Develop interactive, component-driven web applications using ReactJS.
- Manage state using React hooks and Context API.
- Implement routing, form validation, and data handling in SPAs.

**Prerequisite:** FullStk 101 – Web Development Fundamentals

**Tools:** ReactJS, NodeJS, GitHub

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### **FullStk 103 – Backend Development with Python**

(Weeks 5–6 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Create scalable APIs using Python frameworks such as Flask or FastAPI.
- Integrate server-side logic with relational databases.
- Implement security measures like JWT authentication.

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**Prerequisite:** FullStk 102 – Front-End Development with ReactJS

**Tools:** Flask, FastAPI, SQLAlchemy

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### **FullStk 104 – Databases and ORM Integration**

(Weeks 7–8 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Design and query relational databases (PostgreSQL/MySQL).
- Perform CRUD operations through ORM (Object Relational Mapping).
- Implement database migrations and versioning strategies.

**Prerequisite:** FullStk 103 – Backend Development with Python

**Tools:** PostgreSQL, Alembic, SQLAlchemy

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### **FullStk 105 – API Development & Integration**

(Weeks 9–10 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Build RESTful APIs and GraphQL APIs for real-world applications.
- Apply API security, pagination, rate limiting, and error handling.
- Integrate third-party APIs (Stripe, Google Maps, Twilio).

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**Prerequisite:** FullStk 104 – Databases and ORM

**Tools:** FastAPI, Postman, GraphQL

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### **FullStk 106 – DevOps and Cloud Deployment**

(Weeks 11–12 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Containerize applications with Docker.
- Build and automate CI/CD pipelines for deployment.
- Deploy full-stack apps across AWS, Azure, and GCP.

**Prerequisite:** FullStk 105 – API Development & Integration

**Tools:** Docker, AWS Elastic Beanstalk, GitHub Actions

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### **FullStk 107 – Microservices Architecture**

(Weeks 13–14 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Break monolithic apps into microservices.
- Set up service discovery, load balancing, and asynchronous communication.
- Implement event-driven architecture using messaging systems.

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**Prerequisite:** FullStk 106 – DevOps and Cloud Deployment

**Tools:** Kubernetes Basics, RabbitMQ, Redis Pub/Sub

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### **FullStk 108 – C++ or Rust Fundamentals**

(Weeks 15–16 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Learn systems programming concepts like memory management and concurrency.
- Build basic backend modules or system utilities in C++ or Rust.
- Integrate compiled modules with web backend frameworks.

**Prerequisite:** FullStk 107 – Microservices Architecture

**Tools:** C++ (GCC/Clang) or Rust (Cargo)

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### **FullStk 109 – Advanced Backend Systems**

(Weeks 17–18 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Implement advanced database optimization and indexing strategies.
- Build scalable event-driven and asynchronous APIs.
- Integrate monitoring and observability for backend services.

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**Prerequisite:** FullStk 108 – C++ or Rust Fundamentals

**Tools:** Redis, Prometheus, Grafana

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### **FullStk 110 – Capstone Project and Final Showcase**

(Weeks 19–24 | Lec 0 Hrs / Lab 0 Hrs / OJT + Capstone 72 Hrs | 72 Total Hrs | 2.5 Credit Hours)

Students will:

- Design, build, and deploy a full-stack production-grade application.
- Demonstrate end-to-end system functionality, deployment pipelines, and monitoring setup.
- Present project deliverables including architecture diagrams and deployment documentation.

**Prerequisite:** FullStk 109 – Advanced Backend Systems

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### **Class Schedule:**

- **Day Students:** Monday to Wednesday, 9:30 AM – 12:30 PM
- **Afternoon Students:** Monday to Wednesday, 1:30 PM – 4:30 PM
- **Evening Students:** Monday to Wednesday, 6:00 PM – 9:00 PM
- **Weekend Students:** Thursday to Saturday, Morning/Afternoon/Evening shifts
- **Virtual Mentorship Students:** 12–24 flexible hours per week
- 10-minute break after every instructional hour for all students
- Lunch break for day students from 12:30 PM to 1:30 PM
- No lunch break for evening students (only 10-minute breaks every hour)

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### Dates School Will Be Closed:

- New Year's Day
- Martin Luther King Day
- Presidents' Day
- Good Friday
- Memorial Day
- Independence Day
- LBJ's Birthday
- Labor Day
- Veteran's Day
- Thanksgiving Day
- Day After Thanksgiving
- Christmas Eve
- Christmas Day
- Day After Christmas

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### Class Start Dates:

- Classes begin May 26, 2025, for all tracks (Day, Afternoon, Evening, Weekend)
- New classes start approximately every 8 weeks
- Virtual Mentorship students have rolling admissions

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## Tuition and Fees

Fee Type	Cost
Registration Fee	\$50.00
Books and Supplies (estimated)	\$600.00
Background Check (if applicable)	\$150.00
Tuition (In-person Live Instruction)	\$8,499.00
Tuition (Virtual Live Instruction)	\$7,499.00
Tuition (1-on-1 Virtual Mentorship)	\$9,499.00

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### Total Program Cost:

- In-person: \$9,299.00
- Virtual Live: \$8,299.00
- Virtual Mentorship: \$10,299.00

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### Cost per Single Subject

Each subject cost is based on tuition per contact hour.

### Hourly Tuition Rate (Based on Total Program Cost divided by 288 Contact Hours):

- **In-Person Live Instruction:** \$32.29/hour
- **Virtual Live Instruction:** \$28.82/hour

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- **1-on-1 Virtual Mentorship: \$35.76/hour**

Subject Code	Subject Title	Contact Hours	In-Person Cost	Virtual Live Cost	Virtual Mentorship Cost
FullStk 101	Web Development Fundamentals	24	\$775.00	\$691.68	\$858.24
FullStk 102	Front-End Development with ReactJS	24	\$775.00	\$691.68	\$858.24
FullStk 103	Backend Development with Python	24	\$775.00	\$691.68	\$858.24
FullStk 104	Databases and ORM Integration	24	\$775.00	\$691.68	\$858.24
FullStk 105	API Development & Integration	24	\$775.00	\$691.68	\$858.24
FullStk 106	DevOps and Cloud Deployment	24	\$775.00	\$691.68	\$858.24
FullStk 107	Microservices Architecture	24	\$775.00	\$691.68	\$858.24
FullStk 108	C++ or Rust Fundamentals	24	\$775.00	\$691.68	\$858.24

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Subject Code	Subject Title	Contact Hours	In-Person Cost	Virtual Live Cost	Virtual Mentorship Cost
FullStk 109	Advanced Backend Systems	24	\$775.00	\$691.68	\$858.24
FullStk 110	Capstone Project and Final Showcase	72	\$2,325.00	\$2,075.04	\$2,574.72

### Important Note

Registration Fee, Books and Supplies, and Background Check are already included in the total program cost calculations but apply separately if students enroll in individual subjects only.

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