



C & C++ PROGRAMMING TRAINING SYLLABUS



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HI-TECH INSTITUTION

Hi-tech Institution is a trusted IT training institution established in 2017, dedicated to transforming careers through industry-relevant, real-time project-based learning. With a strong presence in Pondicherry, Thiruchitrambalam, and Chennai, we specialize in creating future-ready professionals.



OUR VISION

Our vision is to bridge the gap between traditional learning and industry needs. Our mission is simple: to empower individuals with hands-on skills, globally recognized certifications, and the confidence to excel in the IT world.

CORPARATE TRUST US

We've successfully partnered with IBM and other forward-thinking organizations to deliver impactful team training. With over 200 batches completed, our track record is built on results, retention, and referrals.

EXPERT FACULTY

At Hi-Tech Institution, training isn't delivered by traditional lecturers — it's led by real-time industry experts. Our C & C++ faculty are seasoned software professionals with 10+ years of hands-on experience in application development, data structures, algorithms, object-oriented programming, and large-scale system design using C and C++.

WHAT LEANERS SAY

Our students not only succeed—they return. Many alumni re-enroll for additional courses and refer friends, a testament to our quality, trainer expertise, and hands-on approach.



WHO WE SERVE

- ◆ **Fresh Graduates** – Gain practical, job-ready skills and enter the IT workforce with confidence.
- ◆ **Career Switchers** – Move from non-IT to IT through structured, mentor-led training.
- ◆ **Working Professionals** – Upgrade your skillset, achieve promotions, and switch to high-demand roles.
- ◆ **Corporate Teams** – Custom programs designed to upskill entire teams for upcoming projects.
- ◆ **Final-Year Students** – Strengthen your resume with internships, projects, and certifications before graduation.
- ◆ **Non-Technical Backgrounds** – Step-by-step guidance to transition into IT even without coding experience.
- ◆ **Job Seekers** – Resume, interview prep, and portfolio building for faster placements.

JOB READY SKILL

Learn in months what usually takes years! With real-time projects and practical training in C & C++, data structures, and object-oriented programming, you'll gain strong coding fundamentals, problem-solving skills, and the confidence to build efficient software applications from Day 1.



400+
BATCH TRAININGS
SUCCESSFULLY COMPLETED

9000+
PROFESSIONALS
SUCCESSFULLY TRAINED



01 INTERACTIVE LIVE TRAINING

100% live sessions with real-time Q&A and doubt-solving. Engaging, interactive, and never boring like recorded videos.

02 DAILY HANDS-ON LABS

Every topic comes with guided labs and tasks so you learn by doing, not just watching.

03 ONE-TO-ONE DOUBT SOLVING

Struggling with a concept? Get personal 1:1 mentoring to clear doubts quickly.

04 MENTOR SUPPORT BEYOND CLASS

Get lifetime trainer guidance and alumni group access for continuous support.

05 FLEXIBLE LEARNING

Morning, evening, and weekend batches to fit your schedule.



DOMAIN EXPERTISE

A Journey of Innovation and Success



CAREER GROWTH IN THIS DOMAIN

A career in C & C++ programming opens doors to high-paying jobs and global opportunities — with Software Developers and Embedded Engineers earning ₹6–15 LPA, driven by the continuous demand for skilled programmers in system software, game development, IoT, and performance-critical applications across industries worldwide.

OUR SPECIALIZATION

Unlike generic programming courses, we focus on complete C & C++ mastery. Our training dives deep into programming logic, data structures, memory management, object-oriented concepts, and real-world application development. Every session bridges theory with hands-on coding — so you don't just learn syntax, you build real programs and solve industry-level problems just like professional developers do.

INDUSTRY-RELEVANT CURRICULUM

- Designed with corporate inputs
- Updated every quarter
- Covers end-to-end C & C++ Programming essentials

CERTIFICATION SUPPORT

We provide complete support to help you master C & C++ through hands-on practice, expert guidance, and real-time problem-solving — building a strong foundation for coding interviews, competitive exams, and software development careers.

INTERNSHIP

Learning without practice is incomplete. That's why we offer internships with real C & C++ projects involving application development, data structures, and problem-solving. Every student codes real programs, builds practical solutions, and earns an internship certificate that strengthens their resume and interview performance.

PORTFOLIO BUILDING

Learning without practice is incomplete. That's why we offer internships with real C & C++ applications and hands-on programming challenges. Students develop practical solutions in data structures, algorithms, and system-level programming, earning certificates that boost their resumes and interview success.

PRACTICAL-FIRST APPROACH

From Day 1, you'll learn by doing through labs, tasks, and real-world projects — gaining hands-on confidence to apply skills instantly.



Table of Contents

C Programming (Fundamentals to Advanced)

◆ Overview of C

- History and Evolution of C Language
- Features and Importance of C
- Structure of a C Program
- Compilation and Execution Process
- Programming Style and Best Practices
- Understanding the Role of Header Files and Libraries

◆ Constants, Variables & Data Types

- C Character Set and Tokens
- Keywords, Identifiers, and Naming Rules
- Constants and Variable Declarations
- Data Types and Type Qualifiers
- Storage Classes (auto, static, register, extern)
- Defining Symbolic Constants (#define, const)
- Variable Initialization and Scope

◆ Operators and Expressions

- Arithmetic, Relational, Logical, and Assignment Operators
- Increment/Decrement, Conditional (?:), Bitwise, and Special Operators
- Arithmetic and Logical Expressions
- Evaluation of Expressions and Operator Precedence
- Type Casting and Implicit Conversions

◆ Managing Input and Output

- Basic Input and Output Functions (printf, scanf)
- Reading and Writing Single Characters (getchar, putchar)
- Formatted I/O Functions and Format Specifiers
- Escape Sequences and Buffering Concepts



◆ Decision Making and Branching

- Conditional Statements (if, if-else, else if ladder)
- Nested Decision Structures
- switch-case Statement and Menu-driven Programs
- Conditional (?:) Operator
- goto Statement and its Use Cases

◆ Decision Making and Looping

- Iterative Statements (while, do-while, for)
- Nested Loops and Loop Control Statements (break, continue)
- Infinite Loops and Control Flow Best Practices

◆ Arrays

- Introduction to Arrays and Memory Layout
- Single-Dimensional Arrays: Declaration, Initialization, and Access
- Two-Dimensional Arrays: Declaration, Initialization, and Traversal
- Multi-Dimensional Arrays and Dynamic Arrays
- Common Array Operations (Sorting, Searching)

◆ Character Arrays and Strings

- Declaring and Initializing String Variables
 - String Input and Output (gets, puts, fgets, fputs)
 - String Manipulation and Comparison
 - Using String Handling Functions (strlen, strcmp, strcat, strcpy)
 - Character Operations and ASCII Concept
- 



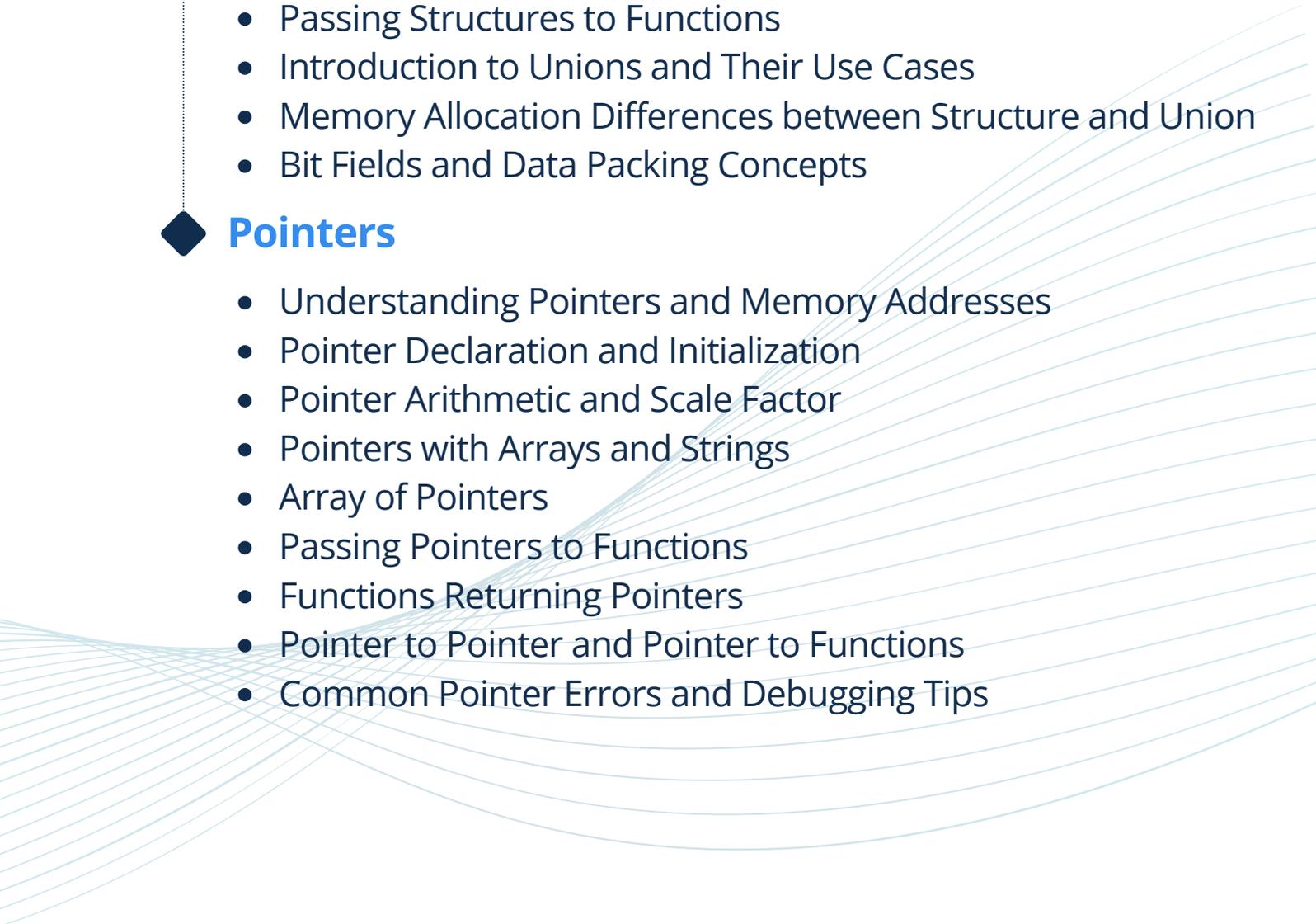
◆ User-Defined Functions

- Importance and Need for Functions
- Function Definition, Declaration, and Calling
- Function Arguments and Return Types
- Categories of Functions (Based on Arguments & Return)
- Recursion and Recursive Algorithms
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- Nesting of Functions and Scope Rules

◆ Structures and Unions

- Declaring and Defining Structures
- Accessing Structure Members
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- Introduction to Unions and Their Use Cases
- Memory Allocation Differences between Structure and Union
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◆ Pointers

- Understanding Pointers and Memory Addresses
 - Pointer Declaration and Initialization
 - Pointer Arithmetic and Scale Factor
 - Pointers with Arrays and Strings
 - Array of Pointers
 - Passing Pointers to Functions
 - Functions Returning Pointers
 - Pointer to Pointer and Pointer to Functions
 - Common Pointer Errors and Debugging Tips
- 

◆ File Handling

- File Concept, Streams, and Modes
- Opening and Closing Files (fopen, fclose)
- Reading and Writing Files (fscanf, fprintf, fgetc, fputc)
- Random Access to Files (fseek, ftell, rewind)
- Error Handling and EOF
- Command Line Arguments and File Operations

C++ Programming (Object-Oriented Concepts)

◆ Introduction to C++

- Overview and Evolution of C++
- Key Differences Between C and C++
- Features and Advantages of C++
- Introduction to Object-Oriented Programming
- Exception Handling Overview
- Role of the Standard Template Library (STL)

◆ Introduction to Classes

- Defining Classes and Creating Objects
- Access Specifiers (private, public, protected)
- Constructors and Types (Default, Parameterized, Copy Constructor)
- Destructors and Object Cleanup
- Static Data Members and Member Functions
- Function Overloading and Inline Functions

◆ Introduction to OOP Concepts

- Principles of OOP: Encapsulation, Abstraction, Inheritance, Polymorphism
- Class and Object Fundamentals
- Importance of Data Hiding and Modularity
- Difference Between Procedural and Object-Oriented Programming

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WHAT OUR STUDENTS SAY

We believe results speak louder than promises — and our students' reviews are proof of the trust and transformation we deliver every batch.

 **Kirubagaran .D**
5 reviews
★★★★★ 8 months ago

I joined this institute to take training for AWS & DevOps. My all over experience is very good 🤩. The knowledge given by the sir is very helpful to me 🙏. Thank you.

 **Harish Kumar**
4 reviews
★★★★★ 8 months ago

While I joining this institute, I have less knowledge in aws and devops , after the guidance and good teaching by the Mathesh sir I have gained more knowledge. Thank you for your guidance and Teaching.

 **harshavardhana**
2 reviews
★★★★★ 11 months ago

I recently completed an AWS and DevOps course at Hi-Tech institution, and I couldn't be more satisfied with the experience. The course was incredibly well-structured, covering both fundamental and advanced concepts in a way that was easy to follow yet challenging enough to push my learning boundaries.

 **Sridhar sri**
1 review
★★★★★ 5 months ago

"Well-organized AWS and DevOps training with experienced mentors. A great place to build practical skills!"

 **Bhuvanesh.V**
2 reviews
★★★★★ 5 months ago

Good learning environment! The AWS and DevOps sessions were clear, practical, and highly beneficial for beginners

 **AKASH**
2 reviews
★★★★★ 5 months ago

Excellent training on AWS and DevOps! The mentors were knowledgeable, and the sessions were very insightful. Highly recommended!

 **Sanjeevi Kumar**
1 review
★★★★★ 3 months ago

I recently completed the AWS DevOps course at HiTech and I'm extremely satisfied with the experience. The trainers were knowledgeable and provided excellent support throughout the course. The hands-on labs and real-world examples helped me gain practical skills and confidence in using AWS services.

 **Kamal Raj**
1 review · 1 photo
★★★★★ 11 months ago

Beyond the classroom, the Hi-Tech Institution center offers excellent support for AWS & Devops The availability of additional resources, such extra practice sessions, is incredibly beneficial. The staff is always approachable and ready to assist with any queries or challenges.

 **Anuj Jena**
3 reviews
★★★★★ 7 months ago

I have attend AWS batch (Batch Number - B184 & Timing - 7:00 AM - 9:00 AM (Weekend)) & it was my good luck to had Hari as my batch instructor. Hari has tremendous knowledge on AWS & DevOps. I learnt lot of new topics related to AWS & DevOps. I want to highlight some point here according to my experience.

 **Sathyaswarubini Kannan**
4 reviews
★★★★★ 7 months ago

I am Sathyaswarubini from Batch -B184, honestly speaking that Hari is a perfect instructor for AWS DevOps session. I am completely impressed with his Youtube videos and coaching. Every session started on time with clear note of him. I spent a great period of time on his sessions and got some confident level to attend the interviews in future. Thank you hari.

 **Naveen Kumar**
1 review
★★★★★ 5 months ago

Had a great experience learning AWS and DevOps at Hi-Tech Institution. The structured training and expert guidance made it worthwhile

 **D.Chandru**
1 review
★★★★★ 2 weeks ago **NEW**

I had the opportunity to learn AWS Cloud Computing at HTGE Technologies Pvt Ltd for one month, and it was an excellent experience. The training was well-structured, covering both fundamental concepts and practical applications of AWS services. The instructors were knowledgeable, supportive, and always ready to clarify doubts with real-world examples. which helped me gain confidence in working with cloud tools. The learning environment was friendly, interactive, and career-focused.

 **vindhiya e**
1 review
★★★★★ 4 days ago **NEW**

I recently completed a one-month Cloud Computing internship at HTGE Technologies Pvt Ltd. It was a great learning experience where I got to work with real cloud platforms like AWS . The team was supportive, and the work environment made it easy to grow and ask questions. I learned a lot in a short time and truly appreciated the hands-on exposure. Highly recommend HTGE for anyone looking to build practical skills in tech.

Check out what our students are saying about us on Google :

<https://share.google/hm4sQdfCGAIA3CYHN>



Your Future in C & C++ Programming Starts Here

You've explored the course, the curriculum, the career scope, and the success stories. Now comes the most important step — taking action to build your career.

At HTGE Technologies, we are not just another training institute. We are a career-launchpad trusted by 200+ batches and corporate clients like IBM. Our mission is simple: to bridge the gap between learning and real-world application.

MEDIA MENTIONS

Youtube : <https://www.youtube.com/@hitechinstitution>

LinkedIn : <https://www.youtube.com/@hitechinstitution>

Instagram : <https://www.instagram.com/hitech.institution>

Website : www.hitechinstitution.com

COURSE DETAILS

Duration: 1.5 Months + Internship

Mode : In-Person & On-Line

Language : Tamil & English

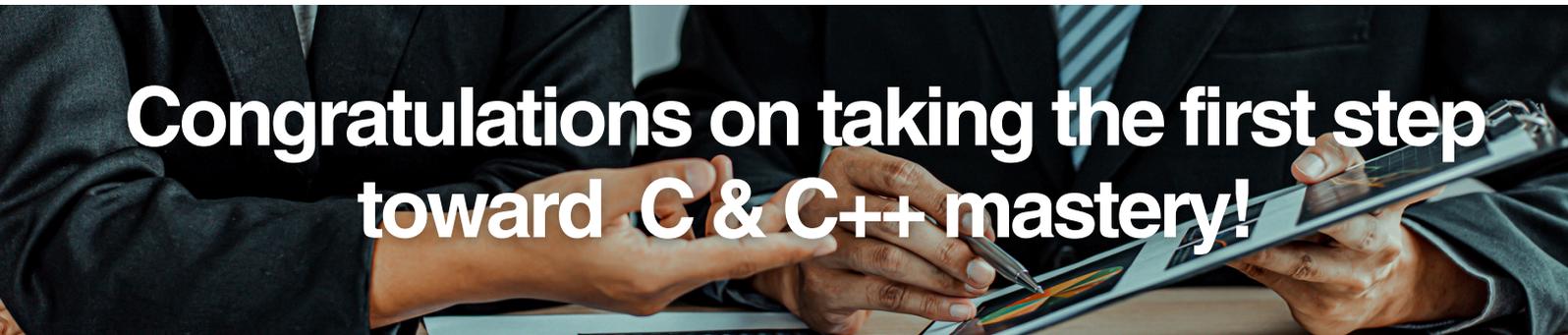
Mode of Training: Live Online Sessions (with recordings)

Eligibility: Freshers, Working Professionals, Final-Year Students, Career Switchers

READY TO TAKE THE NEXT STEP

Visit: hitechinstitution.com

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**Congratulations on taking the first step
toward C & C++ mastery!**