

Hindustan College of Science and Technology

Farah (Mathura)

Department of Information Technology

Date: 01 Feb 2020

Circular

Registration for Value-Added Course: "Problem Solving using C and C++ (VACIT-001)"

Dear students,

We are pleased to announce a value-added course on "Problem Solving using C and C++" scheduled to take place from 20 February 2020 to 11 June 2020 for 2nd year students. This course aims to equip you with essential problem-solving skills using the C and C++ programming languages, which are fundamental to your academic and professional growth in the field of Information Technology.

Course Details:

Course Name: Problem Solving using C and C++

Course Duration: 20 February 2020 to 11 June 2020 (30 Hrs)

Last Date of Registration: 10 February 2020

Registration:

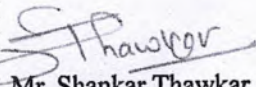
To participate in this valuable opportunity, interested students must register themselves by 10 February 2020. To register, kindly contact Mr. Ajay Raj Parashar, Assistant Professor in the Department of Information Technology. Mr. Parashar will guide you through the registration process and address any queries you may have.

Please note that this course is mandatory for all the students of 2nd year IT Department. As, this value-added course presents a unique opportunity for you to enhance your programming skills and stand out in the highly competitive IT industry.

For any further information or clarification, please feel free to contact the undersigned.

Thank you.

Sincerely,


Mr. Shankar Thawkar

HOD, IT

Head

Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

Copy to:

1. Director office for kind information
2. All Deans
3. All HODs – for circulation among all concerned
4. Office Copy


Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

VISION OF THE DEPARTMENT

Information Technology undergraduate program empowers students with research and training-based education to become global technical leaders and entrepreneurs, creating positive societal impact.

MISSION OF THE DEPARTMENT

- Foster innovation, research, and entrepreneurship through real-world projects and industry collaborations.
- Develop ethical global leaders with theoretical and practical education, critical thinking, and social responsibility.
- Provide outcome-based education for holistic development, integrating technical skills with leadership and teamwork.

**HINDUSTAN COLLEGE OF SCIENCE AND TECHNOLOGY
MATHURA**

INVITES YOU FOR A
VALUE ADDED COURSE

ON

**PROBLEM SOLVING USING C AND C++
(VACIT-001)**

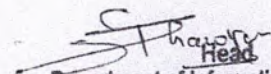
20th Feb 2020 - 11th June 2020

(Session: 2019 - 2020)

Registration Date: 03 Feb 2020 - 10 Feb 2020

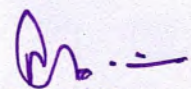
For Registration, Please contact:

Mr. Ajay Raj Parashar
Assistant Professor, IT


Head
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in


Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

ABOUT

THE DEPARTMENT

Department of Information Technology was established in the year 1999 with an objective of imparting quality education in the field of Information Technology. Department of IT was accredited by National board of Accreditation (NBA) in 2006.

The department is located in a sprawling environment with a highly qualified and experienced faculty. The department works with the objective of addressing critical challenges faced by the industry, society and the academia. Perhaps even more important is our unceasing commitment to our students, helping them to learn, grow, develop, and achieve their goals in their pursuit to excel in their professional career.

The department also have a student association QuBIT that provides a platform to future engineers to learn new technological innovations and also provide industry exposure to the students, by organizing workshops, seminars & other events.

ABOUT

THE PROGRAM

This program is designed to provide a comprehensive overview of C/C++ programming. The syllabus covers a range of topics including functions, arrays and pointers, secure coding practices, exception handling and assertions, disk files and I/O, and generic programming with templates. Through practical exercises and problem sets, students will develop the skills to write efficient and secure code in C/C++. The course also covers the dynamic memory allocation model and the use of smart pointers to mitigate common memory pitfalls. In addition, students will have the opportunity to work with the Standard Template Library and understand its various components such as containers, iterators, and algorithms. This program provides a comprehensive learning experience for anyone looking to enhance their C/C++ programming skills. By the end of the program, students will be well-equipped to tackle complex coding projects and have a deep understanding of how to write efficient and secure code in C/C++.

Objectives

1. To provide a comprehensive overview of C/C++ programming and its various components.
2. To equip students with the skills to write efficient and secure code through the use of functions, arrays and pointers, and secure coding practices.
3. To teach students how to handle errors and exceptions in their code, and implement proper error handling and assertions.
4. To introduce students to the dynamic memory allocation model, including smart pointers and common memory pitfalls.
5. To help students understand and utilize the Standard Template Library and its various components, including containers, iterators, algorithms, and customizing and extending the STL. Allowing them to perform real-world data analysis and extract insights.

COURSE

OUTCOMES

CO-1:

Understand functions and write efficient, secure code in C/C++.

CO-2:

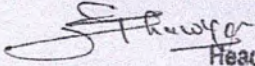
Analyze and use arrays, pointers, dynamic memory allocation, and type inference.

CO-3:

Identify and prevent common string and integer errors using secure coding practices.

CO-4:

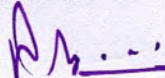
Implement error handling, assertions, exceptions, stack unwinding, disk files, I/O streams, and the standard template library (STL), including customization and extension


Head

Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in



Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

CO-PO-PSO MAPPING

Problem Solving using C and C++ (VACIT-001)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	3	3	2	2	-	3	-	3	2	-	-	2	2	3	-
CO-2	2	3	3	3	-	1	-	2	2	-	-	2	3	3	-
CO-3	1	2	-	2	1	1	-	-	2	-	-	2	3	2	-
CO-4	3	2	2	3	3	3	-	3	2	-	2	2	3	3	-
Avg	2.25	2.50	2.33	2.50	2.00	2.00	0.00	2.67	2.00	0.00	2.00	2.00	2.75	2.75	0.00

PSO1:

Equip students with the latest IT knowledge and skills to tackle real-world challenges.

PSO2:

Foster leadership, critical thinking, problem-solving, and communication skills for IT careers.

PSO3:

Encourage entrepreneurship and innovation through research, start-up projects, industry collaborations, and business skills.

PO1	Engineering Knowledge
PO2	Problem Analysis
PO3	Design/development of solutions
PO4	Conduct investigations of complex Problems
PO5	Modern tool usage
PO6	The engineer and society
PO7	Environment and sustainability
PO8	Ethics
PO9	Individual and team work
PO10	Communication
PO11	Project management and finance
PO12	Life-long learning

S.P. Jaiswal
Head
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in

[Signature]

Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

CONVENOR



Dr. Shankar Thawkar
Associate Professor
HOD, IT

VAC COORDINATOR

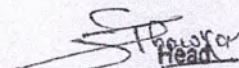


Mr. Ajay Raj Parashar
Assistant Professor
IT Department

CO-CONVENOR

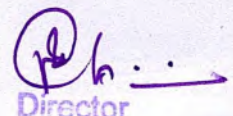


Mrs. Deepti Mittal
Assistant Professor
Dy. HOD, IT


Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in

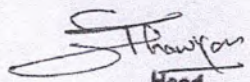

Director

Hindustan College of
Science & Technology
FARAH (MATHURA)

SPEAKERS

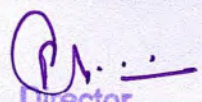


Mr. Ajay Raj Parashar
Assistant Professor
IT Department


Head
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in


Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

COURSE OUTLINE

Problem Solving using C and C++ (VACIT-001)

Module 1: Functions in C/C++

- Introduction to functions
- Alt function syntax
- Function return type deduction
- Static, const, and inline functions
- Default parameters
- Overloaded functions (operator and members)
- Friend Functions
- Overriding functions

Module 2: Arrays and Pointers in C/C++

- Introduction to arrays and pointers
- Smart pointers
- Pointers and dynamic memory allocation
- Type inference
- Array and pointer arithmetic and indirections

Module 3: Secure Coding Practices in C/C++

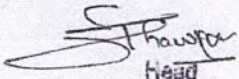
- Common string, integer, and dynamic memory allocation errors
- Integer and dynamic memory allocation vulnerabilities
- String vulnerabilities and mitigation strategies

Module 4: Exception Handling and I/O in C/C++

- Introduction to errors and exceptions
- Exception mechanisms
- Exceptions and polymorphism
- Stack unwinding and cleanup
- Common error handling issues
- Using streams for input and output
- String streams, file streams, and bidirectional I/O
- Dynamic memory allocation model
- Working with dynamic memory, array-pointer duality, and smart pointers.

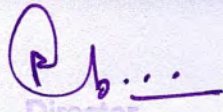
Text Book/References:

- Horowitz and Sahani, "Fundamentals of Data Structures", Galgotia Publications Pvt Ltd Delhi India.


Head
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in


Director
Hindustan College of
Science & Technology
FARAH (MATHURA)

LECTURE PLAN

Problem Solving using C and C++ (VACIT-001)

Module 1: Functions in C/C++

- Lecture 1: Introduction to functions
- Lecture 2: Alt function syntax
- Lecture 3: Function return type deduction
- Lecture 4: Static, const, and inline functions
- Lecture 5: Default parameters
- Lecture 6: Overloaded functions (operator and members)
- Lecture 7: Friend Functions
- Lecture 8: Overriding functions

Module 2: Arrays and Pointers in C/C++

- Lecture 9: Introduction to arrays and pointers
- Lecture 10: Smart pointers
- Lecture 11: Pointers and dynamic memory allocation
- Lecture 12: Type inference
- Lecture 13: Array and pointer arithmetic and indirections

Module 3: Secure Coding Practices in C/C++

- Lecture 14: Common string, integer, and dynamic memory allocation errors
- Lecture 15: Integer and dynamic memory allocation vulnerabilities
- Lecture 16: String vulnerabilities and mitigation strategies

Module 4: Exception Handling and I/O in C/C++

- Lecture 17: Introduction to errors and exceptions
- Lecture 18: Exception mechanisms
- Lecture 19: Exceptions and polymorphism
- Lecture 20: Stack unwinding and cleanup
- Lecture 21: Common error handling issues
- Lecture 22: Using streams for input and output
- Lecture 23: String streams, file streams, and bidirectional I/O fstream

- Lecture 24: Dynamic memory allocation model
- Lecture 25: Working with dynamic memory, array-pointer duality, and smart pointers
- Lecture 26: Review of functions in C/C++
- Lecture 27: Review of arrays and pointers in C/C++indirections
- Lecture 28: Review of secure coding practices in C/C++
- Lecture 29: Review of exception handling and I/O in C/C++
- Lecture 30: Final Exam Review

Head

Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

DEPARTMENT OF INFORMATION TECHNOLOGY

www.hcst.edu.in

Director

Hindustan College of
Science & Technology
FARAH (MATHURA)

HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY, FARAH - MATHURA

Department of Information Technology

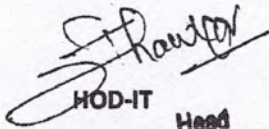
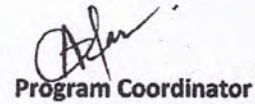
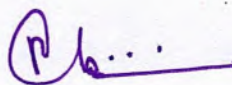
Value Added Course - Registration Form

VACIT-001 - Problem Solving using C/C++

Session: 2019-2020

From 20th Feb'2020 - 11th June'2020

S.N.	Roll No.	Name of the Student	Department	Semester
1	1806413001	ADARSH KUMAR JADON	IT	4TH
2	1806413002	AMAN NAGAR	IT	4TH
3	1806413004	Aparna Kulshrestha	IT	4TH
4	1806413005	ARIF ALAM	IT	4TH
5	1806413006	ASEEM MITHWANI	IT	4TH
6	1806413007	AYUSHI GUPTA	IT	4TH
7	1806413008	BAHART SINGH	IT	4TH
8	1806413010	DIVYANSH JOHARI	IT	4TH
9	1806413012	HARSH AGARWAL	IT	4TH
10	1806413015	NITIN SINGH RANA	IT	4TH
11	1806413018	PRANSHI CHAURASIA	IT	4TH
12	1806413019	PRIYANSHU SAXENA	IT	4TH
13	1806413020	RAJAT SHARMA	IT	4TH
14	1806413021	ROHIT PATHAK	IT	4TH
15	1806413022	SATYAM SINGH RATHORE	IT	4TH
16	1806413023	SAURABH SHUKLA	IT	4TH
17	1806413024	SHARAD SHAKYA	IT	4TH
18	1806413025	SHIVAM CHOUDHARY	IT	4TH
19	1806413026	SHIVAM CHAHAR	IT	4TH
20	1806413027	YASH MANGHNANI	IT	4TH


HOD-ITHead
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura
Program Coordinator
Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



Hindustan College of Science & Technology

Agra-Delhi Highway (NH-2), Farah, Distt. Mathura - 281 122

PRACTICAL ATTENDANCE REGISTER

Academic Year : 2019 - 2020

Semester : 4th

Teacher's Name Mr. Ajay Parashar

Designation A.P. (Information Technology)

Sr. No.	Class / Branch	Subject	Practical	Load (Hrs. / Week)
1.	4IT-A	Value Added Course (C/C++)		0-0-2
2.				
3.				
4.				
5.				

Head
Department of Information Technology
Hindustan College of Science & Technology
Farah, Mathura

Director

Hindustan College of
Science & Technology
FARAH (MATHURA)

VACIT-001

HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY, MATHURA

CLASS 4th Sem

SECTION / BRANCH IT

BATCH A

S. No.	Roll No.	Name of Student	Attendance														
			Date	22/2	29/2	7/3	14/3	6/6	6/6	8/6	8/6	8/6	10/6	10/6	10/6	11/6	11/6
			No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1806413001	Adarsh Jadon	A	2	4	6	8	10	12	14	16	18	20	22	24	26	28
2	2	Aman Nagar	A	A	2	4	6	8	10	12	14	16	18	20	A	A	A
3	4	Aparna Kulshrestha	2	4	6	8	A	A	10	12	14	16	18	20	22	24	26
4	5	Asif Alam	A	2	4	6	8	10	12	14	16	18	20	22	24	26	28
5	6	Abhinav Mishra	2	4	A	6	8	10	12	14	16	18	20	22	24	26	28
6	7	Ayushi Gupta	2	4	6	8	10	12	14	16	18	A	A	A	20	22	24
7	8	Bekhat Singh	2	A	4	6	8	10	12	14	16	18	20	22	24	26	28
8	10	Ekanshi Johari	A	2	4	6	8	10	12	14	16	18	20	22	24	26	28
9	12	Harsh Agarwal	A	2	4	6	8	10	12	14	16	18	20	22	A	A	A
10	15	Nitin Singh Rana	2	4	A	A	6	8	A	A	A	10	12	14	16	18	20
11	18	Pranvi Chaurasia	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
12	19	Bhyanika Saxena	2	A	A	4	6	8	10	12	14	16	18	20	22	24	26
13	20	Rajat Sharma	2	4	6	8	10	12	14	16	18	A	A	A	20	22	24
14	21	Rohit Patil	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
15	22	Satyam Singh Rana	2	4	6	A	8	10	12	14	16	18	20	22	24	26	28
16	23	Saurabh Shukla	2	4	6	8	10	12	14	16	18	20	22	24	A	A	A
17	24	Sharad Shukla	2	4	A	6	8	10	12	14	16	18	20	22	24	26	28
18	25	Shivan Chaudhary	2	4	6	8	A	A	10	12	14	16	18	20	22	24	26
19	26	Shivan Chahal	A	2	4	6	8	10	12	14	16	18	20	22	24	26	28
20	27	Jash Manghani	2	A	4	A	6	8	10	12	14	A	A	A	16	18	20

Note: Each Lecture of 02 hrs

Total Lectures: 02 X 15 = (30)

[Signature]
 Head
 Department of Information Technology
 Hindustan College of Science & Technology
 Farah, Mathura

[Signature]
 Sign. of Faculty

(2)

[Signature]
 Director

Sign. of H.O.D.

HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY, FARAH, MATHURA
DEPARTMENT OF INFORMATION TECHNOLOGY
CLASS TIME TABLE FOR EVEN SEMESTER 2019-20

SESSION: JAN 2020 -JUNE 2020
 YEAR/SEM: II/ 4 IT-A

W.E.F: 05/02/2020
 ROOM NO: 221 A

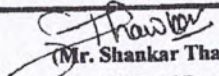
CLASS TEACHER: Mr. Ajay Parashar
 COUNSELORS: Mr. Ajay Parashar (A1+A2)

Day \ Time	I	II	III	IV	1:30-02:20	V	VI	VII
	10:10-11:00	11:00-11:50	11:50-12:40	12:40-01:30		02:20-03:10	03:10-04:00	04:00-04:50
MONDAY	T AFL	EES	OS	PYTHON	L U N C H	PDP		WD(T)
TUESDAY	WD	PDP		OS		T AFL(T)	PYTHON LAB (LAB#04)	
WEDNESDAY	T AFL	UHV	OS	WD		EES	WD LAB (LAB #05)	
THURSDAY	PYTHON	WD	T AFL	UHV		EES(T)	OS LAB (LAB#06)	
FRIDAY	T AFL	OS	PYTHON	EES		UHV	PYTHON LAB (LAB#04)	
SATURDAY	UHV	EES	OS(T)	WD		VALUE ADDED COURSE -VACIT001 PROBLEM SOLVING USING C/C++		

		Class Room No			
Subject Code	Name of the Subject	Lecture	Tutorial (A)	Name of the Faculty	
KCS 401	OPERATING SYSTEMS (OS)	221-A		MR. AJAY PARASHAR	
KIT 401	WEB DESIGN (WD)	221-A		MS. DEEPTI MITTAL	
KVE 401	UNIVERSAL HUMAN VALUES (UHV)	221-A		DR. PRAMOD KUMAR SINGH	
KOE 048	ELECTRONICS ENGG SCIENCE (EES)	221-A		MS. RUPALI MAHAJAN	
KCS 402	THEORY OF AUTOMATA & FL (T AFL)	221-A		MR. MOHIT SINGH	
KNC 402	PYTHON PROGRAMMING (PYTHON)	221-A		MS. SUMITA LAMBHA	
		Practical Room No.			
Lab Code	Name of the Lab	Lab No (A)	Name of the Faculty		
KCS 451	OPERATING SYSTEMS LAB	LAB# 06	MR. AJAY PARASHAR		
KIT 451	WEB DESIGN LAB	LAB# 05	MS. DEEPTI MITTAL		
KCS 453	PYTHON PROGRAMMING LAB	LAB# 04	MS. SUMITA LAMBHA		
VACIT001	VALUE ADDED COURSE (PROBLEM SOLVING USING C/C++)	LAB# 05	MR. AJAY PARASHAR		

(Ms. Deepti Mittal)
 TI/ IC, IT Dept.


 Director
 Hindustan College of
 Science & Technology
 FARAH (MATHURA)


 (Mr. Shankar Thawkar)
 HOD, IT Dept.

Department of Information Technology
 Hindustan College of Science & Technology
 Farah, Mathura



CERTIFICATE OF COMPLETION
Department of Information Technology
Academic Session 2019-20

This is to certify that Mr. Bharat Singh, Roll No. 1806413008
of Course B. Tech. Information Technology, IV Semester
has successfully completed 30 hours Value Added Course titled
“PROBLEM SOLVING USING C AND C++” (Course Code: VACIT-001).

Mr. Shankar Thawkar
Head of Department

Mr. Ajay Raj Parashar
Course Coordinator

Dr. R. K. Upadhyay
Director

Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



SHARDA
GROUP OF INSTITUTIONS
AGRA • MATHURA • G.NOIDA



HINDUSTAN
College of Science and Technology
Farah, Mathura

CERTIFICATE OF COMPLETION

Department of Information Technology

Academic Session 2019-20

This is to certify that Ms. Ayushi Gupta, Roll No. 1806413007
of Course B. Tech. Information Technology, IV Semester
has successfully completed 30 hours Value Added Course titled
“PROBLEM SOLVING USING C AND C++” (Course Code: VACIT-001).

Mr. Shankar Thawkar
Head of Department

Mr. Ajay Raj Parashar
Course Coordinator

Dr. R. K. Upadhyay
Director

Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



CERTIFICATE OF COMPLETION
Department of Information Technology
Academic Session 2019-20

This is to certify that Mr. Divyansh Johari, Roll No. 1806413010
of Course B. Tech. Information Technology, IV Semester
has successfully completed 30 hours Value Added Course titled
“PROBLEM SOLVING USING C AND C++” (Course Code: VACIT-001).

Mr. Shankar Thawkar
Head of Department

Mr. Ajay Raj Parashar
Course Coordinator

Dr. R. K. Upadhyay
Director



CERTIFICATE OF COMPLETION
Department of Information Technology
Academic Session 2019-20

This is to certify that Ms. Aparna Kulshreshtha, Roll No. 1806413004
of Course B. Tech. Information Technology, IV Semester
has successfully completed 30 hours Value Added Course titled
“PROBLEM SOLVING USING C AND C++” (Course Code: VACIT-001).

Mr. Shankar Thawkar
Head of Department

Mr. Ajay Raj Parashar
Course Coordinator

Dr. R. K. Upadhyay
Director

Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



CERTIFICATE OF COMPLETION
Department of Information Technology
Academic Session 2019-20

This is to certify that Mr. Arif Alam, Roll No. 1806413005
of Course B. Tech. Information Technology, IV Semester
has successfully completed 30 hours Value Added Course titled
“PROBLEM SOLVING USING C AND C++” (Course Code: VACIT-001).

Mr. Shankar Thawkar
Head of Department

Mr. Ajay Raj Parashar
Course Coordinator

Dr. R. K. Upadhyay
Director