Course Report

Value Added Course on

Scientific Programming in FORTRAN
&
Document Preparation using LATEX

1. **Name of the course:** *Scientific Programming in FORTRAN&Document Preparation using LATEX*

2. **Duration:** 36 hours

3. **Resource Person:** Dr. Niladri Sekhar Mondal

4. **Contents:**

- *Module 1 (3 hours) (Basic elements of FORTRAN 95)*

  Character Set, Constants and their types, Variables and their types, Keywords, Variable Declaration and concept of instruction and program. Operators: Arithmetic, Relational, Logical and assignment Operators. Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted) Executable and Non-Executable Statements.

- *Module 2 (3 hours) (Layout of Fortran program)*

  Format of writing Program and concept of coding, Initialization and Replacement Logic

- *Module 3 (3 hours) (Examples from Physics/Mathematics problems)*

- *Module 4 (4 hours) (Preparing a basic input file for Latex)*

  TeX/LaTeX word processor, preparing a basic LaTeX file, Document classes, preparing an input file for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments

- *Module 5 (6 hours) (Equation representation using different symbols)*

  Formulae and equations, Figures and other floating bodies, Lining in columns- Tabbing and tabular environment, Generating table of contents, bibliography and citation, Making an index and glossary.

- *Module 6 (3 hours)*

  Use of Overleaf: An online Latex editor

- *Hands on exercises: (14 hours)*

a) To compile a frequency distribution and evaluate mean, standard deviation etc.
b) To evaluate sum of finite series and the area under a curve.
c) To find the product of two matrices
d) To find a set of prime numbers and Fibonacci series.
e) Motion of a projectile using simulation and plot the output for visualization.

f) Numerical solution of equation of motion of simple harmonic oscillator and plotthe outputs for visualization.
g) Motion of particle in a central force field and plot the output for visualization.

5. Objectives

Objective of this value added course is to provide hands on computer programming to a beginner using FORTRAN 95 to solve scientific problems using numerical methods and preparation of technical documents using LATEX.

6. Course outcome

a) Students will learn programming with Fortran 95. It is quite powerful programming language in scientific community. Numerical solution of many complex equations and plot visualization can be done using Fortran.
b) Fortran is a great tool for modelling supercomputers as it is highly optimized for vectorization. So, students opting for a research career will find this course useful to a great extent.
c) Latex is a document preparation system for high-quality typesetting. It is most often used for medium-to-large technical or scientific documents but it can be used for almost any form of publishing. Students who have attended this course will find the hands on training quite useful in future.

Dr.Pijush Kanti Tripathi
Officer-in-Charge,HGC

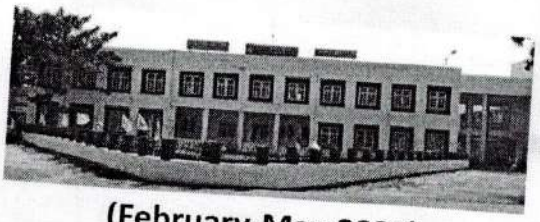
Officer-in-charge
Haldia Government College
P.O.-Debhog, Dist- Purba Medinipur

Dr. Debolina Das
Value Added Course Convener

VALUE-ADDED COURSE
ON

Scientific Programming in FORTRAN & Document Preparation using LATEX

Organized
By
DEPARTMENT OF PHYSICS
HALDIA GOVERNMEMNT COLLEGE



(February-May.2022)

About the course:

Hands on computer programming to a beginner using FORTRAN 95 to solve scientific problems using numerical methods and preparation of technical documents using LATEX.

Course Structure:

- Basic elements of FORTRAN 95.
- Layout of Fortran program.
- Examples from Physics/Mathematics problems.
- Preparing a basic input file for Latex.
- Equation representation using different symbols.
- Incorporation of figures and other floating bodies.
- Use of Overleaf: An online Latex editor.

Course Duration:

12 weeks course, 3 hours per week for 12 weeks Total 36 contact hours (Including lectures and practical)

Faculty: **Dr. Niladri Sekhar Mondal**

Registration Details:

Enrolment is mandatory for all participants. For enrolment contact Dr. Niladri Sekhar Mondal

Last date for enrolment: **28th February, 2022**

Course Convenor: **Dr. Debolina Das**
Head of the Department,
Department of Physics
Haldia Government College

Course Coordinator: **Dr. Niladri Sekhar Mondal, Assistant Professor in Physics, Haldia Government College.**

Eligibility:

Students pursuing B.Sc. course

Certificate after Completion of Course

Officer-in-charge
Haldia Government College
P.O.-Debhog, Dist- Purba Medinipur

Course Content

Module 1 *(3 hours)*
Basic elements of FORTRAN 95

Character Set, Constants and their types, Variables and their types, Keywords, Variable Declaration and concept of instruction and program. Operators: Arithmetic, Relational, Logical and assignment Operators. Expressions: Arithmetic, Relational, Logical, Character and Assignment Expressions. Fortran Statements: I/O Statements (unformatted/formatted) Executable and Non-Executable Statements.

Module 2 *(3 hours)*
Layout of Fortran program

Format of writing Program and concept of coding, Initialization and Replacement Logic

Module 3 *(3 hours)*
Examples from Physics/Mathematics problems

Module 4 *(4 hours)*
Preparing a basic input file for Latex

TeX/LaTeX word processor, preparing a basic LaTeX file, Document classes, preparing an input file for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments

Module 5 *(6 hours)*
Equation representation using different symbols

Formulae and equations, Figures and other floating bodies, Lining in columns- Tabbing and tabular environment, Generating table of contents, bibliography and citation, Making an index and glossary.

Module 6 *(3 hours)*
Use of Overleaf: An online Latex editor

Hands on exercises: *(14 hours)*

1. *To compile a frequency distribution and evaluate mean, standard deviation etc.*
2. *To evaluate sum of finite series and the area under a curve.*
3. *To find the product of two matrices*
4. *To find a set of prime numbers and Fibonacci series.*
5. *Motion of a projectile using simulation and plot the output for visualization.*
6. *11. Numerical solution of equation of motion of simple harmonic oscillator and plot*
7. *the outputs for visualization.*
8. *12. Motion of particle in a central force field and plot the output for visualization.*

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P.O.-Debhog, Dist- Purba Medinipur

Add-on/ Value Added Course

on

Scientific Programming in Fortran &

Organized by: Document Preparation in Latex

Department of ....PHYSICS.

Haldia Government College

Academic Session: 2021-22

List of Participants

Sl. No.	Name	College ID	Regn. No.	Signature
01.	Rangan Raj Jana	HGC/BSGEN/20/022	1160551	Rangan Raj Jana.
02.	Aniruddha Samanta	HGC/BSGEN/20/019	1160537	Aniruddha Samanta
03.	Sangita Adak	HGC/BSGEN/20/034	1160541	Sangita Adak
04.	Sathi Mandal	HGC/BSGEN/20/014	1160542	Sathi Mandal
05.	SK Mursalin Ali	HGC/BSGEN/20/012	1160543	SK Mursalin Ali
6)	Md Sakil Mallik	HGC/BSCGEN/20/001	1160539	Md Sakil Mallik
7)	Moumita Jana	HGC/BSGEN/21/019	VU2110 23759	Moumita Jana.
8)	Rakesh Barik	HGC/BSGEN/21/004	VU2110 13507	Rakesh Barik
9)	Ardhendu Mandal	HGC/BSGEN/21/026	VU2110 12534	Ardhendu Mandal

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P.O.-Debhog, Dist- Purba Medinipur

Student Enrollment Form

Add-on/ Value Added Course

on

SCIENTIFIC PROGRAMMING IN FORTRAN & DOCUMENT PREPARATION USING LATEX.

Organized by:

Department of PHYSICS

Haldia Government College

Academic Session: 2021-22

1. **Name (Block Letters):** MOUMITA JANA
2. **College ID.:** HGC/BSGEN/21/019
3. **University Registration No. with year:** VU2110135S1, 2021-22
4. **Department:** B.Sc. Gen (PHYSICS)
5. **Semester:** II
6. **Address:** Haldia, Pitambarchak, PIN 721657
7. **Contact No.(Whatsapp No.):** 9476332840
8. **Email id:** maumitajana807@gmail.com

Moumita Jana

Signature of the applicant

For Department Use Only

Approved / Not approved

Course Coordinator

Add-on/Value Added Course
On
Scientific Programming in Fortran &
Document Preparation in LATEX
Evaluation Sheet

Paper:LATEX **Date: 08.06.2022**

Sl No.	Name	CollegeRoll no.	Registration number	Total Marks (FM 20)
1	Aniruddha Samanta	HGC/BSGEN/20/019	VU201160537 Of 2020-21	18
2	MD Sakil Malik	HGC/BSGEN/20/001	VU201160539 Of 2020-21	19
3	Sangita Adak	HGC/BSGEN/20/034	VU201160541 Of 2020-21	18
4	Sathi Mandal	HGC/BSGEN/20/014	VU201160542 Of 2020-21	18
5	Sk Mursalin Ali	HGC/BSGEN/20/012	VU201160543 Of 2020-21	16
6	Rangan Raj Jana	HGC/BSGEN/20/022	VU201160551 Of 2020-21	20
7	Ardhendu Mandal	HGC/BSGEN/21/016	VU211012534 Of 2021-22	19
8	Rakesh Barik	HGC/BSGEN/21/004	VU211013507 Of 2021-22	17
9	Moumita Jana	HGC/BSGEN/21/019	VU211013759 Of 2021-22	18

Debolina Das
Signature of Convener

Signature of Course Coordinator

Officer-in-charge
Haldia Government College
P.O.-Debhog, Dist.- Purba Medinipur

Value Added Course
On
Scientific Programming in Fortran &
Document Preparation using LATEX
Date:08.06.2022

16/20

Answer Sheet for Multiple Choice Questions(Q1-Q20):

Candidate name : SK Mursalin Ali.

College ID: VU2011605 43 of 2020-21 (HGC/BSGEN/20/012)

To indicate your answer, circle the appropriate letter for each question. If you make a mistake, cross out the letter with a cross (X) and write the letter you want at the end of the row, for example:

Question 1	a	b	●	d ✓
Question 2	a	b	●	d X
Question 3	a	●	c	d ✓
Question 4	a	b	c	● ✓
Question 5	●	b	c	d ✓
Question 6	●	b	c	d ✓
Question 7	●	b	c	d ✓
Question 8	●	b	c	d X
Question 9	a	b	●	d ✓
Question 10	a	b	●	d ✓
Question 11	●	b	c	d ✓
Question 12	●	b	c	d ✓
Question 13	a	b	●	d ✓
Question 14	●	b	c	d ✓
Question 15	●	b	c	d ✓
Question 16	a	b	c	● X
Question 17	a	b	c	● ✓
Question 18	a	b	●	d ✓
Question 19	●	b	c	d ✓
Question 20	a	b	c	● ✓

Value Added Course on
"Scientific Programming in FORTRAN
&
Document Preparation using LATEX"

organized by
Department of Physics
Haldia Government College

Certificate of Course Completion

This certificate is presented to Rangan Raj Jana **, student of** 4th **Semester, B.Sc. General, Haldia Government College, for completing the Value Added Course on Scientific Programming in FORTRAN & Document Preparation using LATEX from 05/02/22 to 08/06/22.**

Debolina Das

Dr. Debolina Das
Course Convener
Dept. of Physics,
Haldia Government College

Dr. Niladri Sekhar Mondal
Course Co-Ordinator & Faculty
Dept. of Physics,
Haldia Government College

Dr. Pijush Kanti Tripathi
Officer-in-Charge
Haldia Government College

Officer-in-charge
Haldia Government College
P.O.-Debhog, Dist.-P

VALUE ADDED COURSE
(Fortran & Latex) (21-22)

REGISTER OF ATTEND-

FOR THE MONTH

ATTEND -

Serial No.	Roll No.	NAME OF PUPILS	Sl. No. & dt. of Adm in the Adm. Reg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Rangan Raj Jana		3	3	3	3	3	3	3	3	•	3	3	3							
		Aniruddha Samanta		3	3	3	•	3	3	3	3	3	3	3	3							
		Sangita Adak		3	3	3	3	3	3	3	3	3	3	3	3							
		Sathi Mandal		3	3	3	3	3	3	3	3	3	3	3	3							
		Sk. Mursalin Ali		3	3	3	3	3	3	3	3	3	3	3	•							
		Md Sakil Mallik		3	3	3	3	3	•	3	3	3	3	3	3							
		Moumita Jana		3	3	3	3	3	3	3	3	3	3	3	3							
		Rakesh Barik		3	3	3	3	3	3	3	3	3	3	3	3							
		Ardhendu Mondal		3	3	3	3	3	3	3	3	•	3	3								

NSM 03/03
NSM 12/03
NSM 19/03
NSM 26/03
NSM 02/04
NSM 09/04
NSM 16/04
NSM 23/04
NSM 30/04
NSM 07/05
NSM 14/05
NSM 21/05

Officer-in-charge
Haldia Government College
P.O.-Debhog, Dist.- Purba Medinipur

No. Present daily ... ...

No. Absent daily ... ...

VALUE ADDED COURSE
(Fortran & Latex) (21-22)

REGISTER OF ATTEND-ANCE OF PUPILS

FOR THE MONTH OF _____

ATTEND-ANCE

Serial No.	Roll No.	NAME OF PUPILS	Sl. No. & dt. of Adm in the Adm. Reg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	No. of days: Present	Late Present	Absent on Leave	Absent without Leave
		Rangan Raj Jana		3	3	3	3	3	3	3	3	•	3	3	3																							
		Aniruddha Samanta		3	3	3	•	3	3	3	3	3	3	3	3																							
		Sangita Adak		3	3	3	3	3	3	3	3	3	3	3	3																							
		Sathi Mandal		3	3	3	3	3	3	3	3	3	3	3	3																							
		Sk. Mursalin Ali		3	3	3	3	3	3	3	3	3	3	3	•																							
		Md Sakil Mallik		3	3	3	3	3	•	3	3	3	3	3	3																							
		Moumita Jana		3	3	3	3	3	3	3	3	3	3	3	3																							
		Rakesh Barik		3	3	3	3	3	3	3	3	3	3	3	3																							
		Ardhendu Mondal		3	3	3	3	3	3	3	3	3	•	3	3																							
				NSM 03/03																																		
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				NSM 14/05																																		
				NSM 21/05																																		

Officer-in-charge
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P.O.-Debhog, Dist.- Purba Medinipur

No. Present daily ... ...
No. Absent daily ... ...
TOTAL ...

REMARKS

SREEMA TRADERS, 45 Beniatola Lane, Kolkata - 9 Ph.2219 3865

Hindus - Muslims - + Others -

No. of Free Students - No. of ½ Free Students -

No. of working days during the Month -
Average Daily Attendance -
Percentage of Attendance during the Month -