TECHNICAL SEMINAR AND
COMPUTATIONAL MATHEMATICS (FOSS)
MANDATORY NON-CREDIT COURSE

I B. Tech. - I Semester   **L   T   P   C**
Course Code: A3HS18   **-   -   2   -**

OBJECTIVE:
Seminar is an important component of learning in an Engineering College, where the student gets acquainted with preparing a report & presentation on a topic.

PERIODICITY / FREQUENCY OF EVALUATION: Twice

PARAMETERS OF EVALUATION:
1. The seminar shall have topic allotted and approved by the faculty.
2. The seminar is evaluated for 25 marks for internal and 25 marks for external.
3. The students shall be required to submit the rough drafts of the seminar outputs within one week of the commencement of the class work.
4. Faculty shall make suggestions for modification in the rough draft. The final draft shall be presented by the student within a week thereafter.
5. Presentation schedules will be prepared by Department in line with the academic calendar.

The Seminars shall be evaluated in two stages as follows:

A.   Rough draft

In this stage, the student should collect information from various sources on the topic and collate them in a systematic manner. He/ She may take the help of the concerned faculty.

The report should be typed in "MS-Word" file with "calibri" font, with font size of 16 for main heading, 14 for sub-headings and 11 for the body text. The contents should also be arranged in Power Point Presentation with relevant diagrams, pictures and illustrations. It should normally contain 10 to 15 slides, consisting of the followings:

1.	Topic, name of the student & faculty	1 Slide
2.	List of contents	1 Slide
3.	Introduction	1Slides
4.	Descriptions of the topic (point-wise)	6 - 10 Slides
5.	Conclusion	1 - 2 Slides
6.	References/Bibliography	1 Slide

The soft copy of the rough draft of the seminar presentation in MS Power Point format along with the draft report should be submitted to the concerned faculty, with a copy to the concerned HOD within stipulated time.

The evaluation of the rough draft shall generally be based upon the following.

1	Punctuality in submission of rough draft	2
2	Dress Code	3
3	Resources from which the seminar have been based	2
4	Report , and content of Presentation	5
5	Depth of the students knowledge in the subject	5
6	Reception from Questions	5
7	Time Management, Classroom Dynamic	3
	Total Marks	**25**

After evaluation of the first draft the supervisor shall suggest further reading, additional work and fine tuning, to improve the quality of the seminar work.

Within 7 days of the submission of the rough draft, the students are to submit the final draft incorporating the suggestions made by the faculty.

B.   Presentation: (External)

After finalization of the final draft, the students shall be allotted dates for presentation (in the designated seminar classes) and they shall then present it in presence students, HOD, In charge, faculties of the department and at least one faculty from some department / other department.

The student shall submit 3 copies of the Report neatly bound along with 2 soft copies of the PPT in DVD medium. The students shall also distribute the title and abstract of the seminar in hard copy to the audience. The final presentation has to be delivered with 18-25 slides.

The evaluation of the Presentation shall generally be based upon the following.

1.	Contents	10 Marks
2.	Delivery	10 Marks
3.	Relevance and interest the topic creates	10 Marks
4.	Ability to involve the spectators	10 Marks
5.	Question answer session	10 Marks
	Total	**50 Marks**

4.   WHO WILL EVALUATE?
The presentation of the seminar topics shall be made before an internal evaluation committee comprising the Head of the Department or his/her nominee, seminar supervisor and a senior faculty of the department / other department

COMPUTATIONAL MATHEMATICS (FOSS)

COURSE OBJECTIVES:
1. To impart knowledge of C/MAT LAB in solving mathematical problems and numerical methods.
2. To familiarize FOSS(Free Open Source Software)
3. To facilitate students in applying C/MAT LAB software to solve complex algebraic and transcendental equations

COURSE OUTCOMES:
  At the end of the course students will be able to
1. To design and write programs to solve interpolation problems
2. To apply C/MAT LAB to curve fitting problems
3. To apply C/MAT LAB in solving algebraic and transcendental equations
4. To analyse various types of linear equations
5. To analyse first order differential equations

UNIT- 1: Interpolation
Programming Tasks:
1. A) Write a program to determine y for a given x, if two arrays of x and y of same size are given. (Using Newton's interpolation both forward and backward).

   B) Write a program to determine y for a given x, if two arrays of x and y of same size are given. (Using Lagrange's interpolation).

   C) Write a program to determine y for a given x, if two arrays of x and y of same size are given. (Using Gauss interpolation). (Selection criteria of the interpolation formula are important).

UNIT - 2: Curve Fitting
Programming Tasks:
2. A) Write a program to find a line of best fit from the given two arrays of x and y of same size.

   B) Write a program to find a curve of the form $y = A e^{bx}$ from the given two arrays of x and y of same size.

   C) Write a program to find a curve of the form $y = Ax^b$ the given two arrays of x and y of same Size.

   D) Write a program to find a curve of the form $y = Ax^2 + Bx + C$ the given two arrays of x and y of same Size.

UNIT - 3: Solution of Algebraic and Transcendental Equations
Programming Tasks:
3. A) Write a program to find the root of a given equation using bisection method. (Write this program such that the initial values given to the system are not usable, then the system should ask us to give new set of initial values).

   B) Write a program to find the root of a given equation using method of false position. (Regula false position).

   C) Write a program to find the root of a given equation using iteration method.

   D) Write a program to find the root of a given equation using Newton Raphson method.

UNIT- 4: Linear system of equations
Programming Tasks:
4. A) Write a program to find the solution of given system of linear equations using L-U decomposition method.

   B) Write a program to find the solution of given system of linear equations using Jacobi's method.

   C) Write a program to find the solution of given system of linear equations using Gauss siedel iteration method.

   D) Write a program to find the solution of given system of linear equations using Gauss Jordan elimination method.

UNIT- 5: Numerical Differentiation, Integration and Numerical solutions of First order differential Equations
Programming Tasks:

5.   A) Write a program to evaluate definite integral using trapezoidal rule, Simpsons 1/3rd rule and 3/8th   rule.
     B) Write a program to solve to given differential equation using Taylor's series.
     C) Write a program to solve to given differential equation using Euler's and modified Euler's method.
     D) Write a program to solve to given differential equation using Runge-Kutta method.

TEXT BOOKS:
1.   Introductory Methods Of Numerical Analysis By Ss Sastry
2.   Numerical and Statistical Methods with Programming In C By Sujatha Sinha And Subhabadra Dinda, Scitec Publishers.
3.   Numerical Methods, Principles, Analysis and Algorithms By Srimantapal & Subodh Bhunia, Oxford University Press.

REFERENCES:
1.   Advanced Engineering Mathematics By Alan Jeffery.
2.   Applied Numerical Methods Using Matlab By Rao.V.Dukkipati, New Age Publishers.
     Numerical Methods In Science And Engineering- A Practical Approach By S.Rajasekharan, S. Chand Publications.