DEPARTMENT OF CHEMICAL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	**Mathematical Methods for Chemical Engineers**		
Course Code	**CL 603**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)			
Session	**July 2022**	**Section (if, applicable)**	
Name of Faculty	**Dr.Nagajyothi Virivinti**	**Department**	**Chemical Engineering**
Email	**jyothi@nitt.edu**	**Telephone No.**	**9985329988**
Name of Course Coordinator(s) (if, applicable)	**Dr.P.Kalaichelvi**		
E-mail	**jyothi@nitt.edu**	**Telephone No.**	**09985329988**
Course Type	☑ **Core course**	☐ **Elective course**	

Syllabus (approved in BoS)

Design and experiments, Experiments with single factor, analysis of variance, factorial design, regression by least square.

Development of mathematical models by first principles, Conservation principles, Mathematical models for chemical engineers

Analytical solution of simultaneous linear and non-linear equations, Numerical techniques for linear and non-linear equations, linearization of non-linear equations

Numerical techniques for ordinary differential equations, initial and boundary value problems, Numerical solution to Partial differential equations.

COURSE OBJECTIVES

1. Analysis of experiments
2. Describe chemical engineering processes in mathematical form by employing the appropriate conservation principles
3. Identify if an analytical solution to the model equations

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Able to analyze the data with minimum number of experiments	PO1,PO2,PO,PO4,PO5, PO11
2. Develop a mathematical model for chemical processes	PO1,PO2,PO,PO4,PO5, PO11

3. apply mathematics to solve the chemical engineering problems.	**PO1,PO2,PO,PO4,PO5, PO11**
4. apply numerical techniques to solve the model	**PO1,PO2,PO,PO4,PO5, PO11**

COURSE PLAN – PART II

COURSE OVERVIEW

This course gives you an introduction to Design of experiments, modeling methods and simulation tools for a wide range of natural phenomena. The different methodologies that will be presented here can be applied to very wide range of processes.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/ Contact Hours	Topic	Mode of Delivery
1	10hours	Design and experiments, Experiments with single factor, analysis of variance, factorial design, regression by least square.	Presentation, chalk and talk
2	8 hours	Development of mathematical models by first principles, Conservation principles, Mathematical models for chemical engineers	Presentation, chalk and talk
3	10 hours	Analytical solution of simultaneous linear and non-linear equations, Numerical techniques for linear and non-linear equations, linearization of non-linear equations	Presentation, chalk and talk
4	10hours	Numerical techniques for ordinary differential equations, initial and boundary value problems, Numerical solution to Partial differential equations.	Presentation, chalk and talk

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment-I	After 13th contact hour	One hour	20%
2	Assignment			10%
3	Test			10%
4	Assessment-II	After 30th contact hour	One hour	20%
	Compensation Assessment		One hour	20%
5	Final Assessment		Two hours	40%

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback will be taken two times, one after the Assessment-I, the other at the end of the semester.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

Students may contact the faculty over mail (jyothi@nitt.edu) or over whatsapp 9985329988

ATTENDANCE

- A uniform attendance policy for all courses is recommended. **At least 75% attendance in each course is mandatory.**
- Students with **less than 75% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

COMPENSATION ASSESSMENT POLICY

All the assessments are compulsory. I any student fail to appear the assessment; marks will be given as zero.

ACADEMIC HONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee constituted with the faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The policy against academic dishonesty shall be applicable for the current batches also.

ADDITIONAL INFORMATION

FOR APPROVAL

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____

(Dr. N. SAMSUDEEN)