NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CIVIL ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	M. Tech. – Structural Engineering		
Course Title	CAD in Structural Engineering		
Course Code	**CE660**	**No. of Credits**	**2**
Course Code of Pre-requisite subject(s)			
Session	January 2021	**Section (if, applicable)**	**-**
Name of Faculty	**Dr. Kamal Krishna Bera**	**Department**	**Civil Engineering**
Email	kamal@nitt.edu	**Telephone No.**	+91 – 9301481280
Name of Course Coordinator(s) (if, applicable)	**-**		
E-mail	-	**Telephone No.**	
Course Type	**Laboratory**		

Syllabus (approved in Senate)
Computer Aided Drafting - Basic 2D objects – line, polyline, circle, ellipse – Dimensioning – Preparation of plan, elevation and section drawings of simple structural objects – Introduction to 3D - DBMS concepts - Civil Engineering Databases – Data entry and Reports. Spreadsheet concepts – Worksheet calculations in Civil Engineering - Regression and Matrix Inversion.   Development of C programs to solve problems using numerical techniques: 1. Roots of an equation using Newton – Raphson method.   2. Solution of linear simultaneous equations using Gauss elimination.   3. Matrix inversion using GJ method.   4. Linear regression line of given points.   5. Curve fitting using Polynomial Regression.   6. Eigen value extraction by power method.   Computer methods of structural analysis - Finite Element programming - Analysis through application packages. Design of steel and RC Structural elements.

COURSE OBJECTIVES
1. To learn the principles of computer graphics and application packages, optimization and artificial intelligence.
2. To expose students to computer aided drafting.
3. To familiarize students with 2D objects in drawing and enable them to prepare plan, elevation and sectional drawings.
4. To expose students to 3D modelling.
5. To apprise students with DBMS concepts.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
By the end of this course the students will be able to	
1. To work on spreadsheets and worksheets.	-
2. To understand regression and matrix inversion concepts.	-
3. To arrive at C programs to solve problems using numerical techniques.	-
4. To use computer methods of structural analysis to solve structural problems.	-
5. To work on finite element programming to solve real time problems.	-

COURSE PLAN – PART II			

COURSE OVERVIEW

This course gives a broad overview of Computer methods of structural analysis - Finite Element programming - Analysis through application packages. Design of steel and RC Structural elements.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	All Weeks	**Part – I** Analysis and Design of Multi-story Building using STAAD or Free Vibration analysis of Cable-supported Bridges using ANSYS/ABAQUS or Free Vibration analysis of Horizontal Axis Wind Turbine using ANSYS/ABAQUS **Part – II** **5 Problems** Given. To be solved using ANSYS/ABAQUS/SAP/ETABS and MATLAB/PYTHON/FORTRAN	• PPT and Explanation through Digital Writing Pad (online MS Team) • Introduction to different software for structural analysis

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Submission Week/Date	Duration	% Weightage
1	Assessment - 1 3 Problems of Part – II	1st Week of March	4 weeks	30 %
2	Assessment - 2 2 Problems of Part – II	Middle of March	2 weeks	20 %
3	Assessment - 3 Results of Part - I analysis	1st week of April	5 weeks	20 %
4	End Semester Examination (Report Submission and Presentaion for Part - I)	1st week of May	10 weeks	30 %

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

First feedback will be collected from students through the class representative (at the end of February) to improve the online instruction methods. Also at the end of the semester for course evaluation as per institute norms.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

Apart from interactions with the students in the regular class, extra classes will be conducted if required. Students can also contact the concerned faculty member (24*7 with prior appointment) as given below:

Dr. Kamal Krishna Bera
Email: kamal@nitt.edu
Mob: +91 - 9301481280

COMPENSATION ASSESSMENT POLICY

To be decided for the students with genuine reasons.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)
  ➢ **At least 75% attendance in each course is mandatory.**
  ➢ **A maximum of 10% shall be allowed under On Duty (OD) category.**
  ➢ Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

MINIMUM PASS MARK POLICY
The Passing minimum mark: As per Institute norms.

ACADEMIC DISHONESTY & 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 including the course 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 above policy against academic dishonesty shall be applicable for all the programs.

FOR APPROVAL

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