

COURSE STRUCTURE & SYLLABUS OF BACHELOR OF TECHNOLOGY (B.TECH)

In

Civil

Course Structure

Fourth Year

Eight Semester

Syllabus

Paper Code	Name of the Subject
BEC6	Structural Dynamics
BEC7	Construction & Planning Management
BEC8	Planning and design of airport
BEC9	Project
BEC6P	Structural Dynamics Practical

BEC6: STRUCTURAL DYNAMICS

CHAPTER 1: SINGLE DEGREE OF FREEDOM SYSTEMS

1. Equations of motion
2. Free vibrations, damping
3. Response to harmonic excitation
4. Response to general dynamic loading
5. Duhamel's integral.
6. Numerical methods

CHAPTER 2: RESPONSE SPECTRUM

1. Concept
2. Definition, pseudovelocity and pseudo-acceleration response spectra
3. Analysis of SDOF systems using response spectrum
4. Difference between response spectrum and design spectrum

CHAPTER 3: MULTI DEGREE OF FREEDOM SYSTEMS

1. Equations of motion
2. Free vibrations, natural frequencies and modes
3. Free vibration analysis for classically damped systems
4. Damped matrix
5. Rayleigh damping
6. Modal analysis
7. Earthquake analysis of linear systems by response spectrum method

CHAPTER 4: CONTINUOUS SYSTEMS

1. Equations of motion
2. Natural frequencies and modes
3. Modal orthogonality

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4. Earthquake response spectrum analysis

CHAPTER 5: APPROXIMATE METHODS

1. Rayleigh's method
2. Dunkerley's method

BEC7: CONSTRUCTION & PLANNING MANAGEMENT

CHAPTER 1:

1. Introduction to construction management
2. Construction industry and its practices
3. Problems of construction industry
4. Management problems in construction
5. Methodology of system design and techniques in construction
6. Elements of engineering economics
7. Probability and statistics
8. Allocation models, coordination and inventory model
9. Queuing model
10. Uncertainty principles
11. Simulation

CHAPTER 2:

1. Engineering economics in construction management
2. Time value of money, interest tables and rates of payment and return
3. Depreciation of capital assets
4. Evaluation of feasibility
5. Public project analysis and evaluation
6. Case study modules

CHAPTER 3:

1. Use of elementary statistics and probability theory
2. Statistical approach, probability distributions, expected value analysis, parameter estimation, statistical inference, quality control using statistical tools, regression and correlation analysis
3. Case study modules

CHAPTER 4:

1. Allocation models in construction
2. Transportation model and its solution
3. Assignment model
4. Sequencing
5. Case study modules

CHAPTER 5:

1. CPM and PERT network in construction
2. Application in the field of construction, planning of scheduling in the field of construction, planning of scheduling phase and control phase, optimization studies, case study modules

CHAPTER 6:

1. Inventory management
2. Inventory costs, lead and economic order quantity, inventory models, ABC analysis, inventory management

CHAPTER 7:

1. Queuing models and applications in construction technology

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2. Queues and queuing theory, models of queues, case study modules

CHAPTER 8:

1. Construction projects management
2. Organisational aspects of sectors such as housing, institutional and commercial, industrial and heavy engineering
3. Contracts theory and practice
4. Human resources development and construction industry

BEC8: PLANNING AND DESIGN OF AIRPORT

1. INTRODUCTION & AIRCRAFT CHARACTERISTICS

General, Requirements Of Aircraft Types, Field Length Regulations, Restrictions On Payload- Range Performance, Weight Components, Aerodynamic Components Parts, Military And Civil Aircrafts, Civil Military Co-Ordination, Classification Of Flying Activity, Relation Of Aircraft To Landing Facility, Aircraft Characteristics, Future Trends In Aircraft Design

2. AIRPORT OBSTRUCTIONS

Zoning Laws, Classification of Obstructions, Turning Zone

3. RUNWAY DESIGN

Runway Orientation, Basic Runway Length, Correction For Elevation, Temperature And Gradient, Airport Classification Runway Geometric Design

4. AIRPORT CAPACITY AND CONFIGURATION

Airport Capacity, Runway Capacity, Gate Capacity, Taxiway Capacity, Runway Configurations, Runway Intersection Design

5. TAXIWAY DESIGN

Factors Controlling Taxiway Layout, Geometric Design Standards, Exit Taxiways, Fillets, Separation Clearance, Holding Apron, Turnaround or Bypass Taxiway

6. TERMINAL AREA

Building and Building Area, Vehicular Circulation and Parking Area, Apron, Hangar, Blast Considerations, Typical Airport Layouts

7. AIRPORT PLANNING

General, Airport Master Plan, Regional Planning, Data Required Before Site Selection, Airport Site Selection, Surveys For Site Selection, Drawings To Be Prepared, Estimation Of Future Air Traffic Needs

8. STRUCTURAL DESIGN OF AIRPORT PAVEMENTS

Introduction, Various Design Factors, Design Methods For Flexible Pavements, Design Method For Air Field Rigid Pavements, Influence Chart For The Moment Mn In A Concrete Pavement Due To A Load In The Interior Of The Slab, LCN System Of Pavement Design, Joints In Cement Concrete Pavements, Special Consideration For Design Of Pavement Facilities For V/Stol Operations

9. VISUAL AIDS

General, Airport Marking, Airport Lighting

BEC9: Project Guideline

Thinking up a Project

You are expected to come up with your own idea for a project. A wide range of topics is acceptable so long as there is substantial computing content and project is predominantly of a practical, problem-solving nature. You might take up an interest which you already have in your stream of engineering. You may do your project in any reputed organization or a department.

Individually or a group of maximum 4 students can take up a project. The project is a vehicle for you to demonstrate the required level of competence in your chosen field of Bachelors.

Start thinking about your project right in the beginning. If you want to do the project in industrial environment start your correspondence fairly early to find an organization, which is ready to accept you. You must submit an outline of your project (two or three pages) to your guide within one month of start of the project work. This must include the Title, Objective, Methodology (main steps to carry out a project), expected output and organization where you intend to carry out the project.

Arranging a Guide

When you have an idea of your project, even a tentative one, approach a suitable person who has interest and expertise in that area. The Guide may be a person with M.E. / M.Tech or a B.E./ B.Tech having a working experience of 3 years in relevant field.

Working with the Guide

The Guide's role is to provide support and encouragement to direct the student's attention to relevant literature, to provide technical assistance occasionally, to read and comment on the draft report and to give guidance on the standard and amount of work required. The Guide is not responsible to teach any new skills and language required for project work or for arranging any literature or equipment. Rest you can workout your own arrangement. The students, who are content to carry out their work largely without supervision, should keep their Guide in touch with what they are doing. A student should not remain silent for months and then appear with a complete project work unknown to supervisor. In such circumstances, the Guide cannot be counted on to give an automatic seal of his approval. If a project produces a piece of software, the Guide would normally expect to see a demonstration of the software in action.

The main purpose of the report is to explain what you did in your project. The reader should be able to see clearly what you set out to do and what you achieved. It should describe the problem addresses and explain why you tackled it in the way you did. It should include your own assessment of how successful the project was.

Resist temptation to include pages of padding. If the project consists of developing an application in area with which a computer scientist would not be familiar – such as chemical testing, stock & shares – it might be necessary to include some explanatory company/ organization profile for whom you have done the work must not appear in chapters and must go to appendix part.

The work that is presented for examiners should be your own. The presentation of another person's work, design or program as though they are your own is a serious examination offence. Direct quotation from the work of others (published or unpublished) must always be clearly identified as such by being placed in quotation marks, it is essential that reader should be able to see where the other work ends and your begins.

Sometimes a project containing good work is marred by a report, which is turgid, obscure and simply ungrammatical. In such cases, it is very difficult to find out the work done during the

project. An examiner cannot be kind enough to look properly on a project that is almost unreadable.

important points for carrying out a project

The organizations or companies offer you a placement for project work out of good will or to get some useful work done. Usually the companies do not provide you everything required by you. You must settle this right in the beginning of the project with the business that what will you get from them and what you have to arrange yourself.

Some times a complication arises due to the fact that some aspect of your project work is considered confidential by the company. If this is so, it is your responsibility to get whatever clearance is necessary from the organization right in the beginning as essential parts like system analysis and design, flow charts etc. can not be missing from a project report.

Make sure you allow enough time for writing report. It is strongly recommended that do some writing work as you carry out the project rather than leaving write up until the end. You must allow at least a month to finally write the report. There has to be enough time for the supervisor to read and comment on it and for student to make changes (sometimes extensive) on the basis of the comments. You may have to prepare two or three drafts before the final submission. Remember that it is mainly the project reports that get examined. An external supervisor receives a pile of project reports written by people who he does not know. If a project produced some software he even may not get time to see it running. In most cases he forms his judgment purely on the basis of the report. Please make your report as readable as possible content wise as well as presentation wise.

1. **Introduction:** This must contain background, any previous work done in the area of your project, your objective and other relevant material that may be helpful to further explain your project work.
2. **The existing system:** The study of the present system; problems in existing system.
3. **System design:** The proposed system; Any specific problem encountered at how you handled them.
4. **Implementation of the system:** Implementation issues and their justification.
5. **Conclusions:** Any shortcoming; your assessment of your work; comparison of your work with similar works; salient features of your work any feature modification. Real time applications of your project work.

References must be given at the end following any standard way of giving references.

For example:

Lan gd rof, "Theory of Alternating Current Machinery" Tata McGraw Hill, July 2003.

Finally, your project work is your brainchild and nobody knows about it more than you. Be confident to explain your work at the time of viva and be honest to accept any short falls.

The Project Report Details

The report should be prepared with the Word Processing software. They should be printed on A4 size (Executive Bond) paper. A margin of 1.5 inches must be allowed on left hand side for binding. The pages should be numbered. The report should be typed in the 12-font size with vertical spacing of 1.5

Cover Page
Project Title
A Project Report

Submitted in partial fulfillment
of the degree of Bachelor of
Technology

A report should be hard bound (light green cover with golden print on the cover). The title of the project should be clearly visible on the cover.

Supervisor's Name Student's Name

The cover page should be as figures below. The first page should be title page containing the title, the candidates name, Enrolment Number, and Name of University. Second page is a certificate from the supervisor. The 3rd page is for the acknowledgement. Fourth page gives the contents of the project report. Fifth page should be an abstract of the project followed by the chapters. You must ensure that all pages are legible. Where the project has produced software for a personal computer, you should include a CD inside the back cover of the report, along with instructions in the report how to run it.

LOGO

Sai Nath University
Ranchi, Jharkhand.

(Year)

Certificate by Supervisor

Acknowledgment

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Abstract

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