



AMITY UNIVERSITY

MADHYA PRADESH

(Established by Ritnand Balved Education Foundation)

Date: 23 /02/2023

BOARD OF STUDIES (Civil Engineering)

MINUTES OF THE MEETING

(06 Pages Only)

1. A meeting of Board of Studies (BoS) of Department of Civil Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh was held on 23 Feb. 2023 at AUMP, under the Chairmanship of Prof. Anshul Gangele, Director (ASET). The following members attended the meeting: -

(a) **Chairman:** Prof. Anshul Gangele, Director (ASET)

(b) **Member:**

- i) Dr. Madhuri Kumari, Professor, Department of Civil Engineering, AUUP Noida.
- ii) Dr. V.K. Gupta, Associate Professor and Head of Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.
- iii) Dr. Mohan Kantharia, Associate Professor, Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.
- iv) Dr. Ripunjoy Gogoi Asst. Professor, Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.

2. **The agenda of the meeting included the following:**

- (a) Review and discussion on Curriculum of B. Tech (Civil Engineering) Program for 2023-27 Batch.
- (b) Review and discussion on Curriculum of M. Tech (Civil Engineering) and M. Tech (Structural Engineering) Program for 2023-25.
- (c) Discussion on trends and technologies in Civil Engineering and consideration of its inclusion in syllabus.
- (d) Any other point with due permission of the Chairperson.

3. **Discussions/Comments:**

- a. (i) Discussion: The syllabus of the subjects offered by B.Tech. (Civil Engineering) 2023-27 batch was presented before the members of the Board of Studies. The scheme and syllabus of the courses have been reviewed.
- (ii) Comments: The existing Scheme and syllabus is well aligned, and few changes were recommended in the syllabus.



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- b. (i) Discussion: The syllabus of M. Tech, CBCS and Pre PhD course work subjects was presented to BOS members and reviewed.
- (ii) Comments: The syllabus of PhD, M. Tech., CBCS subjects is well aligned and need no change.

4. Recommendations:

B. Tech. Program

- (a) The Scheme and syllabus of the subjects to be offered by the Civil Engineering Department to B. Tech. CE for batch 2023-27 was presented before the members of the board of studies. The BOS members approved the CE curriculum and syllabus. **(Refer Annex-1)**
- i) **The syllabus of Basic Civil Engineering and Applied Mechanics (CIV 101) has been revised as per the credits allowed.**
 - ii) **Life Science/Biology for Engineering (CIV 309)** has been replaced by new subject Construction Materials and Techniques (CIV 310).
 - iii) Credits of Civil Engineering and Energy (CIV 308) reduced from 4 to 2.
 - iv) Mechanical Engineering (BME 104) and Basic Electronics Lab has been dropped.
 - v) Civil Engineering-Societal & Global Impact (CIV 407) and Instrumentation & Sensor Technology for Civil Engineering Application Lab (ECE 427) has been dropped and credits of Solid Mechanics (CIV 405) increased from 2 to 4.
 - vi) Credits of Hydraulic Engineering (CIV 502) increased from 2 to 3.
 - vii) Structural Engineering (CIV 503) of credits 4 has been replaced by **Structural Analysis (CIV 508)** of credits 3 which is newly introduced to provide the separate course on analysis of structures.
 - viii) The contents of Geometric Design of Highways (CIV 602) and Engineering Economics (BCH 620) have already been covered in the Transportation Engineering (CIV507) and Estimating & Costing (CIV 604) respectively. Therefore, the Geometric Design of Highways (CIV 602) has been replaced by the new subject **Railway and Airport Engineering (CIV608)** and BCH 620 shifted to Electives A of VII Semester.
 - ix) Credits of Construction Engineering Management increased from 3 to 4.
 - x) Credits of Design of Concrete Structures (CIV 701) reduced from 4 to 3.
 - xi) Credits of Design of Steel Structures (CIV 801) reduced from 4 to 3.
 - xii) The Earthquake Resistant Design of Buildings (CIV 806) included as compulsory subject and the **Airport Planning and Design (CIV 802) included in Electives of VIII - Semester.**
 - xiii) The total hours of the all the theory subjects and practical have been changed to 15 hours per credits as UGC recommendations (NEP).



M. Tech Program:

- i) There is no change in the scheme and syllabus of the course. The total hours of the all the theory subjects and practical have been changed to 15 hours per credits as UGC recommendations (NEP). **(Refer Annexure-2)**

Pre Ph.D.-Course:

There is no change in the scheme and syllabus of the courses. The total hours of the all the theory subjects and practical have been changed to 15 hours per credits as UGC recommendations (NEP).

CBCS:

The credits of the CBCS course reduced from 18 (3+3+3+4+4+1) to 12 (2+2+2+2+3+1) as per NEP.

The changes in Skill Enhancement Course, Ability Enhancement Course and Value-Added Course as per NEP recommendations are given below:

SKILL ENHANCEMENT COURSE:

Credits of French changed from 12 (2+2+2+2+2+2) to 9 (2+2+2+3+0+0).

ABILITY ENHANCEMENT COURSE:

Distribution of credits of Communication Skill (1+1+1+1+1+1 = 6) to 6 (2+2+2+0+0+0 = 6)

Inclusion of new Term Paper/Review Paper in fourth semester, Credits = 2.

VALUE ADDED COURSE:

Credits of Behavior Science changed from (1+1+1+1+1+1 = 6) to (0+0+2+ 2+ 0+ 0 = 4).

The total hours of the all the theory subjects and practical have been changed to 15 hours per credits as UGC recommendations (NEP).

All the aforesaid points have been approved by all the board members present at the meeting.



Neeraj Jain
Director-ASET
Amity University Madhya Pradesh Gwalior

Rohini

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Summary of the changes for B. Tech (Civil Engineering) given below: -

Current Syllabus					Revision/Deletion/merger			Proposed Changes/ Modifications		
Sr. No	Program	Course Title	Old Course Code	No. of Credits	Revision/Deletion/Merger in the Syllabus	Merged Course Title & Code	Merged Course Credit	New Course Title	New Course Code	No. of Credits
1	B. Tech (CE)	Life Science/Biology for Engineering	CIV 309	3	Removed	-	-	Construction Materials and Techniques	CIV 310	3
2	B. Tech (CE)	Civil Engineering and Energy Science	CIV 308	4	-	-	-	-	-	2
	B. Tech (CE)	Mechanical Engineering	BME 104	2	Removed	-	-	-	-	-
4	B. Tech (CE)	Basic Electronics Lab	ECE 327	1	Removed	-	-	-	-	-
5	B. Tech (CE)	Civil Engineering-Societal & Global Impact	CIV 407	2	Removed	-	-	-	-	-
6	B. Tech (CE)	Instrumentation & Sensor Technologies for Civil Engineering Application Lab	CIV 427	1	Removed	-	-	-	-	1
7	B. Tech (CE)	Solid Mechanics	CIV 405	2	-	-	-	-	-	4
8	B. Tech (CE)	Hydraulic Engineering	CIV 502	2	-	-	-	-	-	3
9	B. Tech (CE)	Structural Engineering	CIV 503	4	Removed	-	-	Structural Analysis	CIV 508	3
10	B. Tech (CE)	Geometric Design of Highways	CIV 602	3	Removed	-	-	Railway and Airport Engineering	CIV 608	3
11	B. Tech (CE)	Engineering Economics	BCH 620	3	Shifted to Elective 'A' Semester VII	-	-	-	-	-
12	B. Tech (CE)	Construction Engineering & Management	CIV 601	3	-	-	-	Construction Engineering & Management	CIV 601	4



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13	B. Tech (CE)	Estimating and Costing	CIV 604	2	-	-	-	Estimating and Costing	CIV 604	3
14	B. Tech (CE)	Design of Concrete Structures	CIV 701	4	-	-	-	Design of Concrete Structures	CIV 701	3
15	B. Tech (CE)	Design of Steel Structures	CIV 801	4	-	-	-	Design of Steel Structures	CIV 801	3
16	B. Tech (CE)	Airport Planning and Design	CIV 802	3	Shifted to Elective 'A' Semester VIII	-	-	-	-	-
17	B. Tech (CE)	Earthquake Resistant Design of Buildings Elective of VIII Semester	CIV 806	3	Included as a compulsory Subject in VIII Semester	-	-	-	-	-

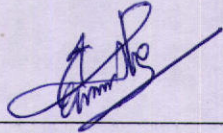
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 Director-ASET
 Amity University Madhya Pradesh Gwalior

BOARD OF STUDIES (B.Tech. CE)
MINUTES OF THE MEETING

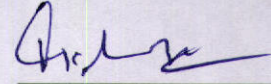
Signature of Members:



Mr. Mohan Kantharia
(Member)



Dr. Ripunjoy Gogoi
(Member)



Dr. V. K. Gupta
(Member)

Madhuri Kumari

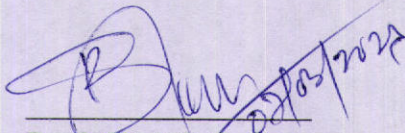
Prof. (Dr.) Madhuri Kumari
External Member

(Absent)

Prof. (Dr.) M. K. Trivedi
External Member



Prof. (Dr.) Anshul Gangele
Chairman- BOS



Prof. (Dr.) R. S. Tomar
Dean Academics
AUMP, Gwalior

M.P. Kaushik
27/03/2023

Prof. (Dr.) M.P. Kaushik
Hon'ble Pro Vice Chancellor
AUMP, Gwalior

APPROVED BY



Hon'ble Vice Chancellor
AUMP, Gwalior



Vivek Jagan
Director-ASET
Amity University Madhya Pradesh Gwalior



AMITY UNIVERSITY

MADHYA PRADESH

(Established by Ritnand Balved Education Foundation)

MEETING OF BOARD OF STUDIES (BOS)
(Civil Engineering)
Amity School of Engineering & Technology
February 2020

Remarks & Suggestions by BOS Members

Revised Syllabus

BASIC CIVIL ENGINEERING & APPLIED MECHANICS

Course Code: CIV 101

Credit Units: 02
Total Hours: 30

Course Objectives:

- To understand the utility of various types of building materials.
- To understand the location, construction detail and suitability of various building elements.
- To determine the location of object on ground surface.
- To understand the effects of system of forces on rigid body in static conditions.
- Introduction to smart city and its component.

Module I: Building Materials: (6 Hours)

Stones, bricks, and cement – its types, properties, test & uses. Introduction of concrete properties & laboratory tests on concrete, curing of concrete and mortar materials.

Module II: Surveying & Positioning: (6 Hours)

Introduction to surveying, survey stations, measurement of distances; Measurement of directions by different methods, measurement of elevations by different methods.

Module III: Smart City:(6 Hours)

Elements of smart city, Concept of green buildings, including rainwater harvesting, non-conventional sources of energy. Smart transportation system

Module IV: Forces and Equilibrium:(6 Hours)

Analytical treatment of concurrent and non-concurrent coplanar forces, free body diagram. Application of equilibrium concepts. Analysis of plane trusses using method of joints.

Module V: Centre of Gravity and moment of Inertia: (6 Hours)

Centroid and Centre of gravity, moment of inertia of composite section. Support reactions, shear force and bending moment diagram for cantilever & simply supported beam with concentrated and distributed load.

Course Outcomes:

Upon completion of the course, the students will be able to:

- Explain concepts and terminologies of building materials, surveying, and mechanics.
- Apply various methods for surveying and mechanics.
- Determine the location, area and volume of objects on ground surface.
- Solve the problems of surveying and mechanics by using various methods.
- Analyze the effects of system of forces on rigid bodies in static conditions.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance



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Text & References:

- Surveying, Vol. – 1, Punmia B.C., Laxmi Publications, 17th edition, 2016
- Building Material, B. C. Punmia, Laxmi Publications, 2016
- A textbook of Engineering Mechanics, D. S. Kumar, Katsons Publications, 2013
- Basic Civil Engineering, S. Ramamrutam & R. Narayan, Dhanpat Rai Pub., 3rd edition, 2013
- Applied Mechanics, Prasad I.B., Khanna Publication 17th edition, 1996
- Surveying, Duggal, Tata McGraw Hill New Delhi, 4th edition, 2013
- Engineering Mechanics - Statics & Dynamics, R.C. Hibbler, Pearson Publications, 14th edition, 2015
- Engineering Mechanics - statics dynamics, A. Boresi & Schmidt, Cengage learning, 1st edition, 2008.
- Applied Mechanics, R.K. Rajput, Laxmi Publications, 3rd edition, 2016



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New Courses Introduced

CONSTRUCTION MATERIALS & TECHNIQUES

Course Code: CIV 310

Credit Units:03

Total Hours: 45

Course Objective:

This course deals with the basic techniques and materials used in construction, repair, and maintenance of Civil Engineering work.

Course Content:

Module-I: Building Materials:(12 Hours)

Physical and mechanical properties of construction materials- Stones, Bricks, and Timber. Cement: Manufacturing, properties of Cement, types of cement and its application in construction. Sand & its properties, M-Sand, coarse aggregates & its properties. Concrete- Water-cement ratio, Strength, and workability. Durability of concrete, Nominal mix & Design mix. Mortar.

Module-II:Miscellaneous materials(10 Hours)

Structural Steel and Aluminum, Roofing materials, Physical description of asbestos sheets, GI Sheets, Tubes, and light weight roofing materials. Timber & its products, PVC, Vinyl flooring, decorative panels, and laminates.

Module-III: Brick & Stone Masonry(11 Hours)

Brick masonry construction – Principles of construction, types of bonds, introduction to reinforced brick work, lintels, and arches. Stone masonry- Types of stone masonry & method of its construction, lintels, Finishing- Pointing, and plastering. General Principles of Flooring, and its types, Roofing and its types, Damp proofing course.

Module-IV: Foundation, thermal insulation and Acoustic(12 Hours):

Function of Foundation, and its types, and method of construction of foundation. Types of materials used for thermal insulation for roofs, exposed walls, doors, and windows in buildings. Sound insulation & acoustic design of hall. Types of materials used for improvement of acoustics in buildings, sound insulation & acoustic design of hall.

Course Outcomes:At the end of this course students will demonstrate the ability to:

- Follow BIS and NBO codes for building construction.
- Supervise construction work.
- Selection of modern construction materials appropriately.
- Understand the common lapses during construction.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

Texts & References:

- Engineering Materials by Rangwala, Charotar Publishing House Pvt. Ltd.
- Building Construction by Ashok Jain, B. C. Punmia, and Arun Kumar, Laxmi publication Pvt.,Ltd.
- Building Materials by S. K. Duggal, New Age International Publishers.
- Building Construction by Sushil Kumar, Standard Publishers Distributors.



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New Courses Introduced

STRUCTURAL ANALYSIS

Course Code: CIV 508
Total Hours: 60

Credit Units: 04

Course Objective:

Structural Analysis, being the critical part in designing building and other structures, is important. Elastic theorems fixed, fixed beam, continuous beam, force method, displacement method and concepts of influence lines diagram are covered in this course.

Course Contents:

Module I: Analysis of Fixed, Continuous, and curved beams (15 hours)

Statically indeterminate structures - degree of static and kinematic indeterminacies – brief introduction to force and displacement methods - fixed and continuous beams - force method- analysis by consistent deformation method - application of moment area and conjugate beam methods for fixed beams - theorem of three moments for continuous beams - shear force and bending moment diagrams - deflection and support settlement. Analysis of cantilever beam curved in plan - analysis of circular beams over simple supports.

Module II: Energy Method (15 hours)

Strain energy and complementary energy - review of strain energy due to axial load - bending, shear and torsion - principle of superposition - principle of virtual work - Castigliano's theorem for deflection - theorem of complementary energy - Betti's theorem - Maxwell's Law of reciprocal deflections - principle of least work - application of method of virtual work (unit load method) and strain energy method for determination of deflections of statically determinate beams - pin-jointed trusses and rigid frames - temperature effects.

Module III: Force and Displacement Method (15 hours)

Slope deflection method - analysis of continuous beams - beams with overhang - analysis of rigid frames - frames with sloping legs - gabled frames - frames without sway and with sway - settlement effects - moment distribution method as successive approximation of slope deflection equations

Module IV: Influence line Diagram (15 hours)

Introduction to moving loads - concept of influence lines - influence lines for reaction, shear force and bending moment in simply supported beams - influence lines for forces in trusses – analysis for different types of moving loads - single concentrated load - several concentrated loads - uniformly distributed load shorter and longer than the span.

Course Outcome:

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance



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Text & References:

- Wang C.K., Statically Indeterminate Structures, McGraw Hill, New York, 1983.
- Wilbur J.B. & Norris C.H., Elementary Structural Analysis, McGraw Hill, 1960.
- Wang C.K., Intermediate Structural Analysis, McGraw Hill, 1983.
- Timoshenko S.P. & Young D.H., Theory of Structures, McGraw Hill, 1965.
- Kinney S.J., Indeterminate Structural Analysis, Oxford & IBH, 1985.
- Matheson J.A.L., Hyperstatic Structures, John Wiley and Sons, 1996.
- Reddy C.S., Basic Structural Analysis, Tata McGraw Hill
- Negi L.S. & Jangid R.S, Structural Analysis, Tata McGraw Hill



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New Courses Introduced

RAILWAY AND AIRPORT ENGINEERING

Course Code: CIV 608

Credit Units:03

Total Hours: 45

Course Objective:

This course deals with the components of railway and airport and design of various components of railway and airport.

Course Content:

Module-I: Introduction to permanent way and its components: (12 Hours)

History and administrative setup of Indian Railways; Rails, Type of rails, rail gauges, permanent way formation, – functions, requirements, sections in embankment and cutting (single/double track), electrified tracks, locomotives, wheel, and axle arrangement, coning of wheels, defect in rails, rail fastenings, Fish plates, spikes, chairs, keys, bearing plates. Sleepers, Timber, steel, cast iron, concrete and prestressed concrete sleepers, sleeper density, ballast: material, specifications.

Module-II:Track Geometrics, Turnouts and crossing, Stations & Yards:(12 Hours)

Railway alignment, vertical alignment – gradients and grade effects, horizontal alignment – horizontal curves, super-elevation, concepts of cant excess and deficiency, safe permissible speed, transition curves, widening of gauges and track clearances, points and crossings – terminologies, types of turnouts, design of turnouts, types of crossings, design of crossings. Different types of stations and Yards: classification and functioning.

Module-III:Signaling and Interlocking, Urban Railways:(9 Hours)

Classification of Signals, method of train working, absolute block system, Centralized train control system, ATS, interlocking of track, principle of interlocking, types of interlocking, high speed track – track requirement, speed limitations, high-speed technologies, Urban railway- railway system in urban areas.

Module-IV: Introduction to Airport:(12 Hours):

Aircraft characteristics affecting airport planning & design, selection of site for an airport. Airports - layout and orientation, Runway and taxiway design consideration and geometric design. Airport drainage management, Zoning laws, Visual aids and air traffic control, Runway lighting, Runway operation Helipads, hangers, service equipment.

Course Outcomes:At the end of this course students will demonstrate the ability to:

- Explain the importance of railway infrastructure.
- Identify the factors governing design of railway infrastructures.
- Analysis and design of the railway track system.
- Understand the concepts of airport engineering and design components of airport.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

Texts & References:

- Railway Engineering by S. P. Arora & S. C. Saxena
- Railway Engineering by M. M. Agrawal.
- Airport Engineering by Rangwala (Charotar Publishing House).
- Airport Planning & Design by Khanna , Arora & Jain Nem Chand & Brothers).



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New Courses Introduced

AIRPORT PLANNING AND DESIGN

Course Code: CIV 802

Credit Units: 03
Total Hours:45

Course Objectives:

- This course aims at providing students with a solid background on principles of airport planning and design. Students will be exposed to the theories and concepts of airport design. Hands-on design experience and skills will be gained and learned through problem sets and a comprehensive design project.

Module I: Introduction: (9Hours)

Aircraft characteristics, aircraft performance characteristics, airport planning and air travel demand forecasting.

Module II: Airport Site Selection and Geometric Design:(9Hours)

Airport site selection, geometric design of the airfield, determination of runway capacity and delay, taxiway and gate capacity, holding aprons, terminal aprons, airport drainage.

Module III: Function of Airport Passenger and Cargo Terminal:(9Hours)

Function of Airport Passenger and Cargo Terminal - Design of Air Freight Terminals, Airport access - Airport Landside planning – Capacity.

Module IV: Air Traffic Management:(9Hours)

Air Traffic Management, navigational aids, ground based systems, satellite-based systems.

Module V: Air Traffic Control and Surveillance Facilities:(9Hours)

Air traffic control and surveillance facilities, airfield lighting, air traffic management.

Course Outcomes:

- Ability to design and analyse airports.
- They will possess the skills to solve problems dealing with different airport design problems.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

- “Planning and Design of Airports” by Robert Horonjeff Francis X. McKelvey William J. Sproule Seth B. Young, Fifth Edition, Mcgraw Hill, 2010.



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