

**Syllabus: Third Year (TY B. Tech.) Civil Engineering
(2023 pattern) w.e.f. A.Y.:2025-26**

SEMESTER-V

Course Code	Courses Name	Teaching Scheme			Examination Scheme and Marks							Credits			
		TH	PR	TUT	Activity	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
CE23301	Design of Steel Structures	3	2	-	10	30	60	-	-	30	130	3	1	-	4
CE23302	Transportation Engg.	3	2	-	10	30	60	-	-	30	130	3	1	-	4
CE23303	Programme Elective Course	3	2	-	10	30	60	30	-	-	130	3	1	-	4
CE23052	Multi-disciplinary minor	2	2	-	20	20	50	20	-	-	110	2	1	-	3
HS23301	Universal Human Values/ CI	2	-	-	10	-	60	-	-	-	70	2	-	-	2
OE230XX	Open Elective	2	-	-	-	-	50	-	-	-	50	2	-	-	2
CE23304	Community Engg. Project/Field Project	-	4	-	10	-	-	30	-	30	70	-	2	-	2
HS23302	Constitution of India (Audit course)														
Total		15	12	-	70	110	340	100	-	70	690	15	06	-	21

BOS

Civil Engineering

DEAN

Academics

DEAN

Autonomy

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**Kamalnayan Bajaj Institute of Engineering & Technology, Baramati
Vidyanagari, Baramati-413133**

Programme Elective List:

CE23303a	Advanced Surveying
CE23303b	Project Management and Economics
CE23303c	Advanced Geotechnical Engineering
CE23303d	Air Pollution and Control
CE23303e	Waste Water Engineering

Honor

CE23382 Advanced Design of Steel Structures



**Vidya Pratishthan's
Kamalnayan Bajaj Institute of Engineering
and Technology, Baramati.**



Faculty of Science and Technology

**Board of Studies
Civil Engineering**

Syllabus

Honors Subjects in Advanced Structural Engineering

**T.Y. B. Tech. (SEM.-V)
Civil Engineering**

(w.e.f. AY: 2025 - 2026)

Syllabus: Honors Subjects in Advanced Structural Engineering w.e.f. AY:2025-26

SEMESTER-V

Course Code	Courses Name	Teaching Scheme (Hrs.)			Examination Scheme and Marks							Credits			
		TH	PR	TU T	Activ ity	ISE	ES E	TW	PR	OR	Total	TH	PR	TUT	Total
CE23382	Advanced Design of Steel Structures	3	2	-	20	20	70	20	20	-	150	3	1	-	4
Total		3	2	-	20	20	70	20	20	-	150	3	1	-	4


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**Course Name with Code: Advanced Design of Steel Structures
(HONOR-CE23382)**

Teaching Scheme:

TH: 03 Hrs/week

PR: 02 Hrs/Week

4

Credits

Examination Scheme:

Examination Scheme:

Activity: 20 Marks

In Semester: 20 Marks

End Semester: 70 Marks

PR: 20 Marks

TW: 20 Marks

Prerequisite:

1. Elementary Design of Steel Structures and Structural Analysis

Companion Course, if any: Laboratory Practical

Course Objectives:

The course on Advanced Design of Steel Structures acquaints the students to analyze and design steel structures as per the Indian Standard code of practice.

Course Outcomes:

After learning the course, the students should be able to:

1. Analyze and design the Castellated beam.
2. Analyze and design of Hoarding Structures.
3. Analyze and design of Cold-Form steel sections.
4. Analyze and design of Industrial Shed.
5. Analyze and design the Pre-Engineering Building (PEB).
6. Analyze and design Steel Bridges.

Course Contents

Unit I: Design of Castellated beams:

(6 Hours)

Concept, fabrication of the castellated beam from rolled steel section, analyze and design of castellated beam for bending and shear as per latest code by limit state method.

Unit II: Analysis and Design of Hoarding Structures:

(7 Hours)

Concept of hoarding Structures, Analysis and design of hoarding structures under dead, live, and wind load as per the latest IS:875 by limit state method.

Unit III: Design of Cold Form Steel:

(7 Hours)

Introduction, advantages of cold-formed sections, load buckling, beam, axially compressed column, combined bending & compression, Tension members, Design based on testing, empirical method & examples.

Unit IV: Analysis and Design of Industrial Shed

(6 Hours)

Various design guidelines of Industrial Shed by IS 800, Design of industrial shed considering gravity and wind load.

Unit IV: Analysis and Design of Pre-Engineering Building (PEB)**(7 Hours)**

Concept of Pre-Engineering Building (PEB), Various components of PEB, Load combinations for PEB design, Analysis and design of PEB structure using IS code.

Unit VI: Design of Steel Bridges**(6 Hours)**

Introduction, steel used in bridges, classification of steel bridges load & load combination, Analysis and design of girder bridge, plate girder bridges, truss bridges, gusseted connection.

Books & Other Resources:**Text books:**

1. Design of Steel Structures – N. Subramanyan, Oxford.
2. Plastic Design of Low -rise frames, Horne, M.R., and Morris, L.J., Granada Publishing
3. Steel Structure -Design and Behaviour, Salmon, C.G., and Johnson, J.E. Harper and Row,
4. Design of Steel Structure - Duggal, Tata Mc Graw Hill.
5. Steel Design for Structural Engineers, Kuzamanovic, B.O. and Willems, N., Prentice Hall,
6. Cold-formed Steel Structures, Wie - Wen Yu., McGraw Hill Book Company, 1973.
7. Steel Structures, William McGuire, Prentice Hall, Inc., Englewood Cliffs, N.J. 1986.
8. Guidelines to design cold form section by Tata Steel.
9. Design of Steel Structure- Shah and Gore, Structures Publishers, Pune

Laboratory Experiments/Assignments:

Term work shall consist of a journal containing the following design, and site visit report.
Oral examination based on term work.

1. Analysis and design of castellated beams using Finite Element software.
2. Design of hoarding structures using commercial software
3. Site visit report on PEB/Industrial shed

Activity: Assignment on each unit