

Energy and Environmental Engineering

24AF1EEES209	Energy and Environmental Engineering	BSC	2L- 0T - 0P	Audit
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Teaching Scheme	Examination Scheme
Theory: 2 hr./week	

Course Objectives

1. To impart the knowledge of Environmental education to the students of Engineering and Technology.
2. To explain basic concepts of sources, causes, effects and control measures of environmental pollution
3. To impart the knowledge of energy sources and power generation
4. To understand the role of individual for the protection of Environment.

Course Outcomes

Student should able to:

1. Know and understand about components and segments of environment, ecosystem and its types.
2. Understand power consuming and power developing devices for the effective utilization
3. Understand and to explain types of Energies such as wind energy, solar energy, hydro energy etc.
4. Understand and explain various types of air pollution, their effects and control measures.
5. Know the various types of water pollution, sources, waste water treatment, effect of water pollution on health and soil pollution

Unit 1: Environment

(5L)

Introduction, Components of Environment, Types of Environment, Brief discussion on Segments of Environment, Environmental Pollution, Ecosystem: Types of Ecosystem, Components of Ecosystem.

Unit 2: Conventional Power Generation

(7L)

Gas Turbine Power Plant: Introduction, Simple Gas Turbine Plant, Open and closed cycle gas turbine plant, Fuels for Gas Turbine Plant. Hydro Power Plant: Introduction, Selection of site for hydro power station, Role of Hydroelectric station in power industry, Classification of Hydroelectric plant, General arrangement and operation. Nuclear Power Plant: Introduction, Nuclear materials, Selection of site, Main parts of nuclear reactor and their functions, Working of Nuclear Power Plant

Unit 3: Energy and Environment

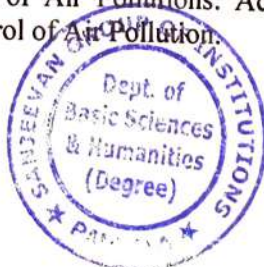
(6L)

Introduction, Sources of Energy, Renewable sources of Energy: Solar Energy, Hydro Energy, Tidal Energy, Wind Energy, Biomass Energy, Geothermal Energy, Non Renewable Energy Sources Coal, Petroleum, Natural Gas.

Unit 4: Air Pollution

(5L)

Introduction, Brief discussion on air pollutants, Sources of Air Pollution: Pollutants from Industry, Pollution by Automobiles, Effect of Air Pollutions: Acid rain, Green House Effect, Global warming; Brief discussion on Control of Air Pollution.



With effective from academic year 2024-25

Unit 5: Water and Soil Pollution

(7L)

Introduction, Types of Water Pollutants, Sources of Water Pollution, Methods to remove impurities in water, Treatment of Industrial waste water: Activated Sludge Process, Impact of Water Pollution on Human Health, Water as a carrier for the transmission of diseases. Sources of Soil Pollution, Harmful effects of Soil Pollution, Control of Soil Pollution.

Text Books:

1. A Textbook on Power System Engineering, A. Chakrabarti, M. L. Soni, P. V. Gupta, U. S. Bhatnagar, Dhanpat Rai and Co. Pvt. Ltd
2. Environmental Chemistry (II edition), Ane Books Pvt.Ltd. V. K. Ahluwalia
3. Environmental Chemistry (sixth edition), A. K. De
4. Essential Environmental Studies, S. P. Mishra and S. N. Pandey

Reference Books:

1. Environmental Science, sixteenth edition, G. Tyler Miller and S. E. Spoolman, Cengage publication.
2. A Textbook of Engineering Chemistry, Dr. S. S. Dara and Dr. S. S. Umare
3. Textbook On Experiments & Calculations In Engineering Chemistry: S. S. Dara, S Chand & Company Pvt Ltd.



Course Structure for Semester III

B. Tech in Mechanical Engineering / B. Tech. in Mechanical Engineering (Sandwich)

Semester III										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				No. of Credits
			L	T	P	CA	MSE	ESE	Total	
BSC7	BTBS301	Engineering Mathematics – III	3	1	-	20	20	60	100	4
PCC1	BTMC302	Fluid Mechanics	3	1	-	20	20	60	100	4
PCC2	BTMC303	Thermodynamics	3	1	-	20	20	60	100	4
ESC10	BTMES304	Materials Science and Metallurgy	3	1	-	20	20	60	100	4
PCC3	BTMCL305	Machine Drawing and CAD Lab	-	-	4	60	-	40	100	2
PCC4	BTMCL306	Mechanical Engineering Lab – I	-	-	4	60	-	40	100	2
HSSMA	BTHM 307	Constitution of India	2				20	20		Audit
PROJ-2	BTES209P	IT – 1 Evaluation	-	-	-	-	-	100	100	1
Total			14	4	8	220	100	440	700	21

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course

PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course

HSSMC = Humanities and Social Science including Management Courses

Course Structure for Semester IV

B. Tech in Mechanical Engineering / B. Tech. in Mechanical Engineering (Sandwich)

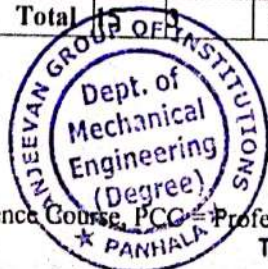
Semester IV										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				No. of Credits
			L	T	P	CA	MSE	ESE	Total	
PCC 5	BTMC401	Manufacturing Processes – I	3	1	-	20	20	60	100	4
PCC 6	BTMC402	Theory of Machines-I	3	1	-	20	20	60	100	4
HSSMC3	BTHM403	UHV II	3	0	-	20	20	60	100	3
ESC11	BTMES404	Strength of Materials	3	1	-	20	20	60	100	4
PEC 1	BTMPE405A-C	Elective-I	3	-	-	20	20	60	100	3
PCC7	BTMCL406	Mechanical Engineering Lab-II	-	-	4	60	-	40	100	2
PROJ-3	BTMI407	Field Training /Industrial Training (minimum of 4 weeks which can be completed partially in the third and fourth semester or in one semester itself)	-	-	-	-	-	-	-	Credits to be evaluated in Sem V
Total			15	2	4	160	100	340	600	20

Head of Department

Mechanical Engineering (Degree)

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course

Somwar Peth - Panhala, Dist-Kolhapur, 416201



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**B.Tech (Electrical Engineering / Electrical Engineering (Electronics and Power)/ Electrical & Electronics Engg / Electrical & Power Engineering)
Curriculum of Second Year**

Semester III

Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
BSC	BTBS301	Engineering Mathematics-III	3	1	-	20	20	60	100	4
PCC1	BTEEC302	Electrical Machines-I	3	1	-	20	20	60	100	4
PCC2	BTEEC303	Electrical and Electronics Measurement	3	1	-	20	20	60	100	4
HSSMC	BTHM304	Basic Human Rights	2	-	-					Audit
ESC	BTES305	Engineering Material Science	3	-	-	20	20	60	100	3
LC	BTEEL306	Electrical Machines-I Lab			2	60		40	100	1
LC	BTEEL307	Electrical and Electronics Measurement Lab			2	60		40	100	1
Project	BTEEP308	Mini Project-I			4	60		40	100	2
Internship	BTES211P	Internship-I Evaluation						50	50	1
			14	3	8	260	80	410	750	20

Semester IV

Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC3	BTEEC401	Network Theory	3	1	-	20	20	60	100	4
PCC4	BTEEC402	Power System	3	1	-	20	20	60	100	4
PCC5	BTEEC403	Electrical Machine-II	3	1	-	20	20	60	100	4
BSC	BTBS404	Analog and Digital Electronics	3	-	-	20	20	60	100	3
PEC1	BTEEP405	Group A	3	-	-	20	20	60	100	3
LC	BTEEL406	Network Theory Lab	-	-	2	30		20	50	1
LC	BTEEL407	Power System Lab	-	-	2	30		20	50	1
LC	BTEEL408	Electrical Machine-II Lab	-	-	2	30		20	50	1
LC	BTEEL409	Analog and Digital Electronics lab	-	-	2	30		20	50	1
Internship	BTEEP410	Internship-II (minimum of 4 weeks which can be completed partially in third or fourth semester or in at one time)	-	-	-	-	-	-	-	-
						220	100	380	700	22

Group-A

- (A) Electromagnetic Field Theory
- (B) Signals and System
- (C) Advance Renewable Energy Sources
- (D) Electronic Devices and Circuits



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Curriculum for Semester V

Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MS E	ESE	Total	
PCC4	BTEEC501	Power System Analysis	3	1	-	20	20	60	100	4
PCC5	BTEEC502	Microprocessor and Microcontroller	3	-	-	20	20	60	100	3
PCC6	BTEEC503	Power Electronics	3	1	-	20	20	60	100	4
PCC2	BTEEPLE504	Group B	3	-	-	20	20	60	100	3
OEC1	BTEEOE505	Group C	3	-	-	20	20	60	100	3
HSSMC	BTHM506	Foreign Language #	-	-	-	-	-	-	-	Audit
LC	BTEEL507	Power System Analysis Lab	-	-	2	60	-	40	100	1
LC	BTEEL508	Microprocessor and Microcontroller Lab	-	-	2	60	-	40	100	1
LC	BTEEL509	Power Electronics Lab	-	-	2	60	-	40	100	1
Project	BTEEP510	Mini project-II	-	-	2	60	-	40	100	1
Internship	BTEEP410	Internship-II Evaluation	-	-	-	-	-	50	50	1
Total			15	2	10	340	100	510	950	22

Semester VI

PCC7	BTEEC601	Switchgear and Protection	3	-	-	20	20	60	100	3
PCC8	BTEEC602	Electrical Machine Design	3	1	-	20	20	60	100	4
PCC9	BTEEC603	Control System Engineering	3	1	-	20	20	60	100	4
PEC3	BTEEP604	Group D	3	-	-	20	20	60	100	3
OEC2	BTEEOE605	Group E	3	-	-	20	20	60	100	3
LC	BTEEL606	Switchgear and Protection Lab	-	-	2	60	-	40	100	1
LC	BTEEL607	Electrical Machine Design Lab	-	-	2	60	-	40	100	1
LC	BTEEL608	Control System Engineering Lab	-	-	2	60	-	40	100	1
Seminar	BTEEM609	Seminar	-	-	4	60	-	40	100	2
Internship	BTEEP610	Internship-III (minimum of 4 weeks which can be completed partially in third or fourth semester or in at one time)	-	-	-	-	-	-	-	Credits to be evaluated in VII sem.
Total			15	2	10	340	100	460	900	22

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Online NPTEL Course



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B.Tech (Electrical Engineering / Electrical Engineering (Electronics and Power)/ Electrical & Electronics Engg / Electrical & Power Engineering)

Curriculum for Semester VII

Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC10	BTEEC701	High Voltage Engineering	3	1	-	20	20	60	100	4
PCC11	BTEEC702	Power System Operation & Control	3	1	-	20	20	60	100	4
PEC4	BTEEP703	Group F	3	-	-	20	20	60	100	3
OEC3	BTEEOE704	Group G	3	-	-	20	20	60	100	3
OEC4	BTEEOE705	Group H	3	-	-	20	20	60	100	3
HSSMC	BTHM706	Engineering Operations and Project Management	-	-	-	-	-	-	-	Audit
LC	BTEEL707	High Voltage Engineering Lab	-	-	2	60	-	40	100	1
Project	BTEEM708	Inhouse Project Part-I /Miniproject-III	-	-	4	60	-	40	100	2
Internship	BTEEP609	Internship-III Evaluation	-	-	-	-	-	50	50	1
Total			15	2	10	340	100	510	950	21

Semester VIII

Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PEC5	BTEEP801	NPTEL online courses	3	-	-	20	20	60	100	3
Project/Internship	BTEEP802	Inhouse Project Part-II /Internship in Industry.	-	-	26	60	-	40	100	12
Total										15

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Important Note: Minimum Eight Experiment to perform based on the syllabus for the laboratory subject.

Semester VII

BTEEP703 Professional Elective (Group F)	BTEEOE704 Open Elective (Group G)	BTEEOE705 Open Elective (Group H)
(A) Energy Audit and Conservation	(A) Process Control Instrumentation	(A) Testing, Maintenance and Commissioning of Electrical Equipment
(B) Electrical System Design for Building	(B) Biomedical Instrumentation	(B) Electric and Hybrid Electric Vehicles
(C) Applications of Power Electronics in Power System	(C) Mechatronics	(C) Internet of Things (IoT)
(D) Electrical Utilization		



Course Structure for Second Year

B. Tech in Electronics and Computer Engineering

Semester IV (Term 4)										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC3	BTECPC401	Python Programming	3	1	-	20	20	60	100	4
PCC4	BTECPC402	Database Management System	3	1	-	20	20	60	100	4
HSSM C3	BTIIM403	Basic Human Rights	3	-	-	20	20	60	100	3
BSC8	BTBS404	Probability Theory and Random Processes	3	-	-	20	20	60	100	3
PEC-1	BTECPE405	Professional Elective Courses -I	3	1	-	20	20	60	100	4
	BTECPE405 A	1. Microcontroller and Advanced Processor								
	BTECPE405 B	2. Data Analysis								
	BTECPE405 C	3. Electromagnetic Engineering and Wave Propagation								
	BTECPE405 D	4. Linux OS								
LC2	BTECPL406	Python Programming Lab and Database Management System Lab	-	-	4	60	-	40	100	2
Seminar	BTECS407	Seminar - II	-	-	4	60	-	40	100	2
Internship	BTECP408	Internship -II	-	-	-	-	-	-	-	Audit
			15	3	8	220	100	380	700	22

Note: The Lab of Professional Elective Courses -I (PEC1) (BTECPE405) should be conducted as per syllabus contents.

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Head of Department

Electronics and Computer Engineering (Degree)
Sanjeevan Group of Institutions,
Somwar Peth - Panhala, Dist-Kolhapur, 416201

With effective from academic year 2022-23

Semester –VI (Third Year)
Proposed Scheme w.e.f. January – 2023

Course Category	Course Code	Course Title	Weekly Teaching Hrs			Evaluation Scheme				
			L	T	P	CA	MSE	ESE	Total	
	BTCOC601	Compiler Design	3	1	-	20	20	60	100	4
	BTCOC602	Computer Networks	3	1	-	20	20	60	100	4
	BTCOC603	Machine Learning	3	1	-	20	20	60	100	4
	BTCOE604	Elective – IV (A) Geographic Information System (B) Internet of Things (C) Embedded Systems	3	-	-	20	20	60	100	3
	BTHM605	Elective – V (A) Development Engineering (B) Employability and Skill Development (C) Consumer Behaviour	3	-	-	20	20	60	100	3
	BTCOL606	Competitive Programming & Machine Learning Lab	1*	-	4	60	-	40	100	3
	BTCOM607	Mini-project – II	-	-	4	60	-	40	100	2
	BTCOF608	Field Training / Internship / Industrial Training-III	-	-	-	-	-	-	-	Audit Evaluation VII Sem.
TOTAL			16	3	8	220	100	380	700	23

*Note: Lecture should be conducted only for Competitive Programming


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 Somwar Peth - Panhala, Dist-Kolhapur, 416201

Semester –IV (Second Year)
Proposed Scheme w.e.f. January – 2022

Course Category	Course Code	Course Title	Weakly Teaching Hrs			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
	BTCOC401	Design & Analysis of Algorithms	3	1	-	20	20	60	100	
	BTCOC402	Operating Systems	3	1	-	20	20	60	100	4
	BTHM403	Basic Human Rights	3	-	-	20	20	60	100	3
	BTBSC404	Probability and Statistics	3	-	-	20	20	60	100	3
	BTES405	Digital Logic Design & Microprocessors	3	1	-	20	20	60	100	4
	BTCOL406	Operating Systems & Python Programming Lab	1*	-	4	60	-	40	100	
	BTCOS407	Seminar – II			4	60	-	40	100	2
	BTCOF408	Field Training / Internship / Industrial Training –II Evaluation						-	-	Audit to be evaluated in V Sem.
TOTAL			16	3	8	220	100	380	700	23

*Note: Lecture should be conducted only for Python Programming



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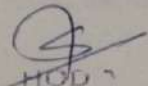
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Head of Department
Computer Science and Engineering (Degree)
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Somwar Peth - Panhala, Dist-Kolhapur, 416201

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Teaching & Evaluation Scheme for Second Year B. Tech. Civil Engg.

Semester- III										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
BSC 5	BTBS301	Mathematics – III	3	1	-	20	20	60	100	4
ESC 8	BTCVES302	Mechanics of Solids	3	1	-	20	20	60	100	4
PCC 1	BTCVC303	Building Construction & Drawing	2	1	-	20	20	60	100	3
PCC 2	BTCVC304	Hydraulics -I	3	1	-	20	20	60	100	4
PCC 3	BTCVC305	Surveying	2	1	-	20	20	60	100	3
HSSMC2	BTHM306	Soft Skill Development	2	-	-	50	-	-	50	Audit
LC 1	BTCVL 307	Solid Mechanics Laboratory	-	-	2	20	-	30	50	1
LC 2	BTCVL 308	Hydraulics-I Laboratory	-	-	2	20	-	30	50	1
LC 3	BTCVL 309	Surveying Laboratory	-	-	2	20	-	30	50	1
Internship	BTES210P	Internship –I Evaluation (From Sem II)	-	-	-	-	-	50	50	Audit
Total			15	05	06	210	100	440	750	21

Semester- IV										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 4	BTCVC401	Building Planning and Drawing	2	-	-	20	20	60	100	2
PCC 5	BTCVC402	Environmental Engineering	2	-	-	20	20	60	100	2
PCC 6	BTCVC403	Structural Mechanics - I	2	1	-	20	20	60	100	3
PCC 7	BTCVC404	Water Resources Engineering	3	-	-	20	20	60	100	3
PCC 8	BTCVC405	Hydraulics - II	2	1	-	20	20	60	100	3
PCC 9	BTCVC406	Engineering Geology	2	1	-	20	20	60	100	3
LC 4	BTCVL407	Building Planning and CAD Lab.	-	-	2	20	-	30	50	1
LC 5	BTCVL408	Environmental Engg. Lab.	-	-	2	20	-	30	50	1
LC 6	BTCVL409	HE-II Lab.	-	-	2	20	-	30	50	1
Internship	BTCVP410	Field Training / Internship/Industrial Training (minimum of 4 weeks training in Summer Vacation after Semester IV and appear at examination in Semester V)	-	-	-	-	-	-	-	To be evaluated in V Sem.
Total			13	03	06	180	120	450	750	19


HOD
 Civil Engineering
 Sanjeevan Engineering & Technology Institute
 Somwar Peth, Panhala, Dist. Kolhapur, (416 201)


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A report based on the visit to water treatment plant shall be submitted.

Course Outcomes: On completion of the course, the students will be able to:

- CO1: Quantify the pollutant concentration in water, wastewater and ambient air.
- CO2: Recommend the degree of treatment required for the water and wastewater.
- CO3: Analyze the survival conditions for the microorganism and its growth rate.

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BTCVL 409 Hydraulic Engineering Laboratory - II

Practical: 2 hours / week

Practical Work consists of at least three performances from groups listed below and detailed reporting in form of journal. Practical examination shall be based on above.

Group (A)

- 1) Calibration of V notch / Rectangular notch.
- 2) Calibration of Ogee Weir.
- 3) Study of hydraulic jump
 - a) Verification of sequent depths,
 - b) Determination of loss in jump.
 - c) Study of parameters with respect to Fraud Number: i) Y_2/Y_1 ; ii) Length; iii) Energy loss
- 4) Study of flow below gates – Discharge v/s head relation, Equation of flow, Determination of contraction in fluid in downstream of gate.
- 5) Velocity distribution in open channel in transverse direction of flow.

Group (B)

- 1) Impact of jet.
- 2) Study of Turbines (Demonstration).
- 3) Tests on Centrifugal Pump.
- 4) Study of Charts for Selection of Pumps

Use of computer programs such as MS Excel is desirable for post-processing of results.

Course Outcomes: On completion of the course, the students will be able to:

- CO1: Understand various properties of fluids and measurement techniques.
- CO2: Carry out calibrations of various flow measuring devices.
- CO3: Understand mechanism of hydraulic jump, various jets and pumps.

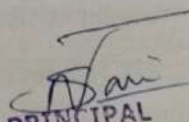
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BTCVP410 Field Training/Internship/Industrial Training


Students are expected to undergo industrial training for at least four weeks at factory / construction site / design offices or in combination of these. Training session shall be guided and certified by qualified engineer / architect / contractor in civil engineering. A neat detailed report on activities carried out during training is expected. Students should undergo training in Summer Vacation after Semester IV and appear at examination in Semester V.

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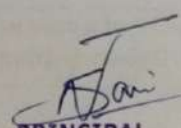

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Semester- VI										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 14	BTCVC601	Design of RC Structures	3	1	-	20	20	60	100	4
PCC 15	BTCVC602	Foundation Engineering	3	1	-	20	20	60	100	4
PCC 16	BTCVC603	Transportation Engineering	3	-	-	20	20	60	100	3
PEC 2	BTCVPE604	A. Industrial Waste Treatment B. Managerial Techniques C. Open Channel Flow D. Water Power Engineering E. Ground Improvement Techniques F. Structural Audit G. Intelligent Transportation Systems H. Plastic Analysis of Structures I. Numerical Methods in Civil Engg. J. Engineering Management	3	-	-	20	20	60	100	3
OEC 1	BTCVOE605	A. Environmental Impact Assessment B. Basic Human Rights C. Business Communication and Presentation Skills D. Composite Materials E. Experimental Stress Analysis F. Python Programming G. Operation Research H. Applications of Remote Sensing and Geographic Information Systems I. Civionics: Instrumentation & Sensor Technologies for Civil Engineering J. Planning for Sustainable Development K. Development Engineering	3	-	-	20	20	60	100	3
HSSMC4	BTHM606	Indian Constitution	2	-	-	50	-	-	50	Audit
LC 10	BTCVL607	SDD of RC Structures Lab.	-	-	2	20	-	30	50	1
LC 11	BTCVL608	Transportation Engineering Lab	-	-	2	20	-	30	50	1
Project	BTCVM609	Mini Project	-	-	2	20	-	30	50	1
Internship		Mandatory (BTCVP610) Field Training/ Internship/Industrial Training (minimum of 4 weeks training in Summer Vacation after Semester VI and appear at examination in Semester VII.)	-	-	-	-	-	-	-	Credits to be evaluated in VII Sem
Total			17	2	6	210	100	390	700	20


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B.Tech. Civil Engineering

Course Structure for Semester VII (Fourth Year) w.e.f. 2023-2024

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTCVC701	Core	Design of Reinforced & Prestressed Concrete Structures	3	1	--	20	20	60	100	4
BTCVC702	Core	Infrastructure Engineering	3	--	--	20	20	60	100	3
BTCVC703	Core	Construction Techniques	3	--	--	20	20	60	100	3
BTCVC704	Core	Professional Practices	3	1	--	20	20	60	100	4
BTCVE705A	Elective IV	Engineering Economics	3	--	--	20	20	60	100	3
BTCVE705B		Finite Element Method								
BTCVE705C		Limit State Design of Steel Structures								
BTCVE705D		Rock Mechanics								
BTCVE705E		Applications of Drone Technology								
BTCVE705F		Advanced RC Design								
BTCVE705G		Applied Hydrology & Flood Control								
BTCVE705H		Legal Aspects in Civil Engineering Contracts								
BTCVE705I		Bridge Engineering								
BTCVOE706A	Open Elective V	Advanced Structural Analysis	3	--	--	-	--	--	--	Audit
BTCVOE706B		Air Pollution Control								
BTCVOE706C		Applications of AI and ML in Civil Engineering								
BTCVOE706D		Introduction to Earthquake Engineering								
BTCVOE706E		Internet of Things								
BTCVOE706F		Tunneling and Underground Excavations								
BTCVOE706G		Bamboo Construction Technology								
BTHM707A		Essence of Indian Traditional Knowledge	2	--	--	--	--	--	--	Audit
BTHM707B		Foreign language**								
BTCVL708		Design & Drawing of Prestressed Concrete	--	--	2	30	--	20	50	1

	Lab.	Structures								
BTCVL709		Professional Practices	--	--	2	30	--	20	50	1
BTCVP610	Training	Field Training / Internship/Industrial Evaluation	--	--	--	--	--	50	50	1
BTCVS710	BTS	Seminar	--	--	2	--	--	50	50	1
BTCVP711	BTP	Project Stage-I**	--	--	4	--	50	50	100	3
Total			20	2	10	160	150	490	800	24

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Course Structure for Semester VIII [Fourth Year] w.e.f. 2023-2024

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Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme				Credits
			L	T	P	CA	MSE	ESE	Total	
BTCVSS801A	(Self-Study Course) #	Characterization of Construction Materials	02**	--	--	20	20	60	100	3
BTCVSS801B		Geo synthetics and Reinforced Soil Structures								
BTCVSS801C		Higher Surveying								
BTCVSS801D		Maintenance and Repair Of Concrete Structures								
BTCVSS801E		Structural Dynamics								
BTCVSS801F		Engineering Systems & Development								
BTCVSS801G		Sustainable River Basin Management								
BTCVSS801H		Modern Construction Materials								
BTCVSS801J		Advanced Town & Urban Planning								
BTCVSS802A	(Self-Study Course) #	Energy Efficiency Acoustics and Day lighting in Building	02**	--	--	20	20	60	100	3
BTCVSS802B		Environmental Remediation of Contaminated Sites								
BTCVSS802C		Remote Sensing Essentials								
BTCVSS802D		Mechanical Characterization of Bituminous Materials								
BTCVSS802E		Soil Structure Interaction								
BTCVSS802F		Design of Water Supply Systems								
BTCVP803	Project Stage-II	Project Stage II or Internship	--	--	24	100	--	100	200	12
Total			04	--	24	140	40	220	400	18

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(Applicable to all the departments of UG Engineering)

New subjects being prescribed for all the students admitted to first year from A.Y. 2022 – 23.

Following subjects are made mandatory for the second year students in all the branches of engineering.

- 1) Universal Human Values II
- 2) Constitution of India

UNIVERSAL HUMAN VALUES - II

Course Code	Course Title	Teaching Scheme			Examination Scheme				
		L	T	P	CA-1	CA-2	Mid Term Test	End Sem Exam	Total Marks
BTHM302/ BTHM402	Universal Human Values - II	3	1	0	10	10	20	60	100

Course Objectives:

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Outcomes:

- CO1:** To become more aware of themselves, and their surroundings (family, society, nature)
- CO2:** They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
- CO3:** They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
- CO4:** They would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

Syllabus:

Module 1 – Introduction to Value Education

- Understanding Value Education
- Self-exploration as the Process for Value Education