INVERTIS

UNIVERSITY BAREILLY

BUILDING VIBRANT PERSONALITIES

COURSE STRUCTURE

DEPARTMENT OF CIVIL ENGINEERING

NAAC CRITERIA 1.2.2

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INVERTIS
UNIVERSITY BAREILLY
Established by Govt. of U.P. u/s 2F of UGC Act, 1956 vide U.P. Act 22 of 2010.

Invertis Institute of Engineering &Technology

INVERTIS UNIVERSITY

Invertis Village
Bareilly-Lucknow NH-24, Bareilly

Effective from the batches admitted in 2014-15 onwards

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DEPARTMENT OF CIVIL ENGINEERING

Vision of the Institute

To develop responsible citizens who would 'think global and act local' and become the change agents of society to meet the challenges of future.

Mission of the Institute

To impart high quality Engineering and Management education to the budding professionals and provide the ambience needed for developing requisite skills to make a mark of excellence in Education, Business and Industry.

Departmental Vision

To produce a new generation of Civil Engineers by providing state-of-the-art education in Civil Engineering recognized worldwide for excellence. This would be guided by extensive research in technology and management for industrial and social needs for sustainabledevelopment.

Departmental Mission

Our endeavour is to make the department the highest seat of learning, prepare Engineers equipped with strong conceptual Foundation coupled with practical insight meet global Business changes.

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Program Educational Objectives (PEOs)

PEO 1 Graduates will be able to analyze, design and propose a feasible solution to civil engineering problems by applying basic principles of mathematics, science and engineering.

PEO 2 Graduates will be inculcated with necessary professional skills, effective oral and written communication to be productive engineers.

PEO 3 Graduates will be able to work as a team in intra and interdisciplinary end over for development of new ideas and products to serve in contemporary societal contexts.

PEO 4 Graduates will be able to face challenges of the world economic order by incorporating expertise gained by faculty in consultancy work, for educating students, involving modern tools and techniques.

PEO 5 Graduates will achieve a high level of technical and managerial expertise to achieve excellence, outstanding leadership to succeed in positions in civil engineering profession with higher threshold start in employment background.

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PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clearinstructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Graduates will be able to apply technical skills and modern engineering tools for civil engineering day to day practice.

PSO2: Graduates will be able to participate in critical thinking and problem solving of civil engineering field that requires analytical and design requirements.

PSO3: Graduates will be able to pursue of lifelong learning and professional development to face the challenging and emerging needs of our society.

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CURRICULUM SEMESTER WISE

First Year First Semester

S. No.	Course Code	SUBJECT	PERIODS			Credit
			L	T	P	
THEORY						
1	BAS-103	Mathematics-I	3	1	0	4
2	BAS-102 or BME-102	Engg. Chemistry or Engg. Mechanics	3	1	0	4
3	BEE-101 or BCS-101	Electrical Engg. or Computer Fundamentals & Programming in C	3	1	0	4
4	BEC-101 or BHU-101	Electronics Engineering or Professional Communication	3	1	0	4
5	BAS-101	Engg. Physics-I	3	1	0	4
6	BME-101 or BAS-104	Manufacturing Process or Environment & Ecology	2	0	0	2
PRACTICAL/TRAINING/PROJECT						
7	BME-151 or BCE-151	Workshop Practice or Engg. Drawing & Computer Graphics	0	1	3	2
8	BAS-152 or BME-152	Engg. Chemistry Lab or Engg. Mechanics Lab	0	0	2	1
9	BEE-151 or BCS-151	Electrical Engg Lab or Computer Fundamentals & Programming in C Lab	0	0	2	1
10	BAS-151 or BHU-151	Physics Lab or Professional Communication Lab	0	0	2	1
11	GP-101	General Proficiency	-	-	-	1
Total			**17**	**6**	**9**	**28**

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First Year Second Semester

S. No.	Course Code	SUBJECT	PERIODS			Credit
			L	T	P	
THEORY						
1	BAS-203	Mathematics-II	3	1	0	4
2	BME-202 or BAS-202	Engg. Mechanics -I or Engg. Chemistry	3	1	0	4
3	BCS-201 or BEE-201	Computer Fundamentals & Programming in C or Electrical Engg.	3	1	0	4
4	BHU-201 or BEC-201	Professional Communication or Electronics Engineering	3	1	0	4
5	BAS-201	Engg. Physics-II	3	1	0	4
6	BAS-204 or BME-201	Environment & Ecology or Manufacturing Process	2	0	0	2
PRACTICAL/TRAINING/PROJECT						
7	BCE-251 or BME-251	Engg. Drawing & Computer Graphics or Workshop Practice	0	1	3	2
8	BME-252 or BAS-252	Engg. Mechanics Lab or Engg. Chemistry Lab	0	0	2	1
9	BCS-251 or BEE-251	Computer Fundamentals & Programming in C Lab or Electrical Engg. Lab	0	0	2	1
10	BHU-251 or BAS-251	Professional Communication Lab or Physics Lab	0	0	2	1
11	GP-201	General Proficiency	-	-	-	1
Total			**17**	**6**	**9**	**28**

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Second Year 3rd Semester

S.NO.	COURSE CODE	SUBJECT	PERIODS			CREDIT
			L	T	P	
THEORY						
1	BHU-301/ BHU-302	IndustrialPsychology /Industrial Sociology	2	0	0	2
2	BOE-031-038/ BAS-301	Science Based Open Elective/ Mathematics III	3	1	0	4
3	BCE-304	Strength Of Materials	3	1	0	4
4	BCE-301	Fluid Mechanics	3	1	0	4
5	BCE-302	Building Materials & Construction	4	0	0	4
6	BCE-303	Surveying	2	1	0	3
PRACTICAL/TRAINING/PROJECT						
7	BCE-351	Fluid Mechanics Lab	0	0	3	1
8	BCE-352	Building Materials Lab	0	0	3	1
9	BCE-353	Surveying Lab	0	0	3	1
10	BCE-354	Building Planning &Drawing Lab	0	0	3	1
11	GP-301	General Proficiency	-	-	-	1
TOTAL			**17**	**4**	**12**	**26**

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Second Year 4th Semester

S.NO	COURSE CODE	SUBJECT	PERIODS			CREDIT
			L	T	P	
THEORY						
1	BHU-401/ BHU-402	Industrial Psychology / Industrial Sociology	2	0	0	2
2	BOE-041-048/ BAS-401	Science Based Open Elective/ Mathematics III	3	1	0	4
3	BCE-401	Geotechnical Engineering I	3	1	0	4
4	BCE-402	Geoinformatics	3	1	0	4
5	BCE-403	Hydraulics & Hydraulic Machines	3	1	0	4
6	BCE-404	Engineering Geology*	2	1	0	3
PRACTICAL/TRAINING/PROJECT						
7	BCE-451	Geotechnical Engineering Lab	0	0	3	1
8	BCE-452	Geoinformatics Lab	0	0	3	1
9	BCE-453	Hydraulic Machines Lab	0	0	3	1
10	BCE-454	Computer based statistical & Numerical Techniques Lab	0	0	3	1
11	GP-401	General Proficiency	-	-	-	1
TOTAL			16	**5**	**12**	**26**

Third Year 5th Semester

S. No.	Course Code	SUBJECT	PERIODS			Evaluation Scheme				SUBJECT TOTAL	Credits
						SESSIONAL EXAM.			E-SEM		
			L	T	P	CT	TA	TOTAL			
THEORY											
1	BCE-501	Geotechnical Engineering II	3	1	0	20	10	30	70	100	4
2	BCE-502	Structural Analysis I	3	1	0	20	10	30	70	100	4
3	BCE-503	Transportation Engineering I	3	1	0	20	10	30	70	100	4
4	BCE-504	Irrigation Engineering	3	1	0	20	10	30	70	100	3
5	BCE-505	Environmental Engineering I	2	1	0	10	5	15	35	50	3
6	BCE-506	Estimation Costing & Valuation	2	1	0	10	5	15	35	50	2
PRACTICAL/DESIGN/DRAWING											
7	BCE-551	Environmental Engineering Design Practice	0	0	2	-	-	10	15	25	1
8	BCE-552	Structural Analysis Lab	0	0	2	-	-	10	15	25	1
9	BCE-553	Geotechnical Engineering II Lab	0	0	2	-	-	10	15	25	1
10	BCE-554	Seminar	0	0	2	-	-	25	-	25	1
11	GP-501	General Proficiency	-	-	-	-	-	25	-	25	1
Total			16	6	8	100	50	230	395	625	25

Third Year 6th Semester

S. No.	Course Code	SUBJECT	PERIODS			Evaluation Scheme					Credits
						SESSIONAL EXAM.			E-SEM/ TOTAL		
			L	T	P	CT	TA	TOTAL			
THEORY											
1	BCE-601	Concrete Structure	3	1	0	20	10	30	70	100	4
2	BCE-602	Structural Analysis II	3	1	0	20	10	30	70	100	4
3	BCE-603	Transportation Engineering II	3	1	0	20	10	30	70	100	4
4	BCE-604	Environmental Engineering II	2	1	0	10	5	15	35	50	2
5		CE Elective-I	3	1	0	20	10	30	70	100	4
6		CE Elective-II	2	1	0	10	5	15	35	50	2
PRACTICAL/DESIGN/DRAWING											
6	BCE-651	Cement Concrete Lab	0	0	2	-	-	10	15	25	1
7	BCE-652	Structural Detailing Lab	0	0	2	-	-	10	15	25	1
8	BCE-653	Transportation Engineering Lab	0	0	2	-	-	10	15	25	1
9	BCE-654	Environmental Engineering Lab	0	0	2	-	-	10	15	25	1
10	GP-601	General Proficiency	-	-	-	-	-	25	-	25	1
Total			16	6	8	100	50	215	410	625	25

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Fourth Year 7th Semester

S. No.	Course Code	SUBJECT	PERIODS			Evaluation Scheme				SUBJECT TOTAL	Credits
						SESSIONAL EXAM.			E-SEM		
			L	T	P	CT	TA	TOTAL			
THEORY											
1	BCE-701	Steel Structures	3	1	0	20	10	30	70	100	4
2	BCE-702	Water Resource Engineering I	3	1	0	20	10	30	70	100	4
3	BCE-703	Environmental Impact Assessment	3	1	0	20	10	30	70	100	4
4	BCE: 704	Pre-stressed Concrete	3	1	0	20	10	30	70	100	4
5		CE ELECTIVE-III	3	1	0	20	10	30	70	100	4
PRACTICAL/DESIGN/DRAWING											
6	BCE-751	Industrial Training	0	0	0	-	-	25	-	25	1
7	BCE-752	Structural Engineering Lab	0	0	2	-	-	10	15	25	1
8	BCE-753	Project	0	0	4	-	-	15	35	50	2
9	GP-701	General Proficiency	-	-	-	-	-	25	-	25	1
Total			15	5	6	100	50	225	400	625	25

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Fourth Year 8th Semester

S. No.	Course Code	SUBJECT	PERIODS			Evaluation Scheme				SUBJECT TOTAL	Credits
						SESSIONAL EXAM.			E-SEM		
			L	T	P	CT	TA	TOTAL			
THEORY											
1	BCE-801	Construction Planning and Management	3	1	0	20	10	30	70	100	4
2	BCE-802	Water Resource Engineering II	3	1	0	20	10	30	70	100	4
3		CE Elective-IV	3	1	0	20	10	30	70	100	4
4		CE Elective-V	3	1	0	20	10	30	70	100	4
PRACTICAL/DESIGN											
5	BCE-851	Cad Lab	0	0	2	-	-	10	15	25	1
6	BCE-852	Steel Structures Lab	0	0	2	-	-	10	15	25	1
7	BCE-853	Project Lab	0	0	4	-	-	50	100	150	6
8	GP-801	General Proficiency	-	-	-	-	-	25	-	25	1
Total			12	4	8	80	40	215	410	625	25

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List of elective
B.Tech. 6th sem.

CE ELECTIVE-I

BCE-011 Matrix Analysis of Structure
BCE-012 Advanced Foundation Design
BCE-013 Environmental Management for Industries
BCE-014 Principles of Town Planning & Architectures

CE ELECTIVE-II

BCE-021 Disaster Management

BCE-022 Earth and Earth retaining Structure

BCE-023Transportation System Planning

BCE-024 Rural Water Supply & Sanitation

List of elective B.Tech. 7 th sem.

CE ELECTIVE-III

BCE:031 Bridge Engineering
BCE:032 Environmental Geotechnology
BCE:033 Finite Element Methods
BCE: 034 Industrial Pollution Control Env.Audit

List of elective B.Tech. 8th sem.

CE ELECTIVE-IV

BCE-041 Open Channel Flow

BCE-042 River Engineering
BCE-043 Plastic analysis of structure

BCE-044 Tunnel Engineering

CE ELECTIVE-V

BCE-051 Ground Improvement Techniques
BCE-052 Earthquake resistant design of structure

BCE-053 Ground Water Management
BCE-054 Analysis and design of hydraulic structures

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