List of New Course(s) Introduced

Department : *Civil Engineering*

Programme Name : *B.Tech.*

Academic Year : 2017-18

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	CE6TPE1B	ADVANCED SURVEYING
02.	CE6TPE1D	HIGHWAY SAFETY
03.	CE6TOE1B	RURAL TECHNOLOGY AND COMMUNITY DEVELOPMENT
04.	CE6TOE1C	ENGINEERING SYSTEM DESIGN OPTIMIZATION
05.	CE6TOE1D	ENGINEERING SYSTEM MODELLING AND SIMULATION

Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2017-18

School : *School of Studies of Engineering and Technology*

Department : *Civil Engineering*

Date and Time : *June 06, 2017 11:00 am*

Venue : *Office chamber of the HOD, Civil Engg.*

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (CG)

DEPARTMENT OF CIVIL ENGINEERING, INSTITUTE OF TECHNOLOGY

MINUTES OF MEETING

Meeting of Board of Studies, (Notified vide letter No 135/BOS/Meeting/Civil Fngg./2017, BSP, dtd. 30.05.2017) of the Department of Civil Engg, IT, GGV has been held today on 6th June 2017, at 11.00 AM in the office chamber of the HOD, Civil Engg. Following members were present in the meeting.

1. Dr. Shailendra Kumar Professor & Head, CED, ITGGV Chairman, BOS
2. Dr. U.K. Dewangan Professor & Head, CED, NIT, Raipur, External Subject Expert-Member
3. Shri R.V. Anand Project Director, IRCON International Ltd., Bilaspur (C.G), Industry Expert - Member
4. Dr. M. Chakradhara Rao Asso. Professor, CED,IT, GGV - Member
5. Mr. N.K. Verma Asst. Professor, CED,IT, GGV - Member

In the meeting, the course scheme and syllabi as per CBCS B. Tech. ordinance (effective from session 2015 & 16) was discussed. The members discussed the scheme and detailed syllabi, proposed for the B. Tech. 3rd and 4th year Civil Engg. (V to VIII Semesters), as per choice based credit system (CBCS).

As such, after discussion and deliberation, members recommended and approved the Course scheme and syllabi as attached herewith for B. Tech. 3rd and 4th year Civil Enge. (V to VIII Semesters) to be effective from session 2017-18 and onwards,

The following New courses were introduced in the of B. Tech. 3rd year scheme and syllabi:

- ADVANCED SURVEYING (CE6TPE1B)
- HIGHWAY SAFETY (CE6TPE1D)
- RURAL TECHNOLOGY AND COMMUNITY DEVELOPMENT(CE6TOE1B)
- ENGINEERING SYSTEM DESIGN OPTIMIZATION (CE6TOE1C)
- ENGINEERING SYSTEM MODELLING AND SIMULATION (CE6TOE1D)

विभागाध्यक्ष
HOD
सिविल इंजीनियरी विभाग
Department of Civil Engineering
प्रौ.स.गु.घा.विश्वविद्यालय, बिलासपुर (छ.ग.)
I.T., G.G.V. Bilaspur (C.G.)

Signature & Seal of HoD

Scheme and Syllabus

CBCS SCHEME

For

B.TECH. DEGREE PROGRAMME

In

Civil Engineering

(V, VI, VII & VIII Semesters, Effective from 2017-18 onwards)

INSTITUTE OF TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA,
(A CENTRAL UNIVERSITY)
BILASPUR (C.G.) - 495009

V SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					E.S.E		
		Theory	L[1]	T[2]	P[3]	C.T.[5]	M.S.E[4]	T.A.[6]	L.A.[7]	Total			
1	CE5TPC07	Design of Concrete Structures	3	1	0	10	20	10	-	40	60	100	4
2	CE5TPC08	Structural Analysis - II	3	1	0	10	20	10	-	40	60	100	4
3	CE5TPC09	Highway Engineering	3	0	0	10	20	10	-	40	60	100	3
4	CE5TPC10	Estimation and Costing	3	0	0	10	20	10	-	40	60	100	3
5	CE5TPC11	Geotechnical Engineering - I	3	0	0	10	20	10	-	40	60	100	3
6	CE5TPC12	Environmental Engineering - I	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE5LPC04	Highway Engineering Lab	-	-	3	-	-	-	30	30	20	50	2
2	CE5LPC05	Environmental Engineering Lab	-	-	3	-	-	-	30	30	20	50	2
											Total Credits		24

VI SEMESTER B.TECH. (CIVIL ENGG.)

Sl No	Subject Code	Subjects	Periods /Week			Evaluation Scheme						Grand Total	Credits
						Internal Assessment					E.S.E		
		Theory	L[1]	T[2]	P[3]	C.T.[5]	M.S.E[4]	T.A.[6]	L.A.[7]	Total			
1	CE6TPC13	Water Resources Engineering -I	3	0	0	10	20	10	-	40	60	100	3
2	CE6TPC14	Environmental Engineering - II	3	0	0	10	20	10	-	40	60	100	3
3	CE6TPC15	Design of Steel Structures	3	1	0	10	20	10	-	40	60	100	4
4	CE6TPC16	Geotechnical Engineering- II	3	0	0	10	20	10	-	40	60	100	3
5	CE6TPE1X	Professional Elective -1X	3	1	0	10	20	10	-	40	60	100	4
6	CE6TOE1X	Open Elective -1X	3	0	0	10	20	10	-	40	60	100	3
		Practical											
1	CE6LPC05	Geotechnical Engineering - Lab	0	0	3	-	-	-	30	30	20	50	2
2	CE6LPC06	Computer Applications in Civil Engg. Lab	0	0	3	-	-	-	30	30	20	50	2
											Total Credits		24
		Note: Industrial Training for one month is mandatory after end semester examination											

X_ indicates the serial alphabet of a subject in the subject group
[1]-Lecture Hours, [2]-Tutorial Hours, [3]- Practical Hours, [4]- Mid Sem. Exam, [5]-Class Tests/Assignments, [6]-Lab Work Assessment

06/06/17

(R.V. Ranganath)

6/6/17
(Dr. U.K. Dewangan)
NIT Raipur.

06/06/17

06/06/17

List of Professional (Core) Electives

Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE6TPE1X	Professional Elective-1 (PE Group-1)	4	VI
A	CE6TPE1A	Advanced Concrete Technology		
B	CE6TPE1B	Advanced Surveying		
C	CE6TPE1C	Advanced Concrete Design		
D	CE6TPE1D	Highway Safety		
E	CE6TPE1E	Advanced Fluid Mechanics		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE7TPE2X	Professional Elective-2 (PE Group-2)	4	VII
A	CE7TPE2A	Design of Prestressed Concrete		
B	CE7TPE2B	Structural Dynamics		
C	CE7TPE2C	Theory of Elasticity & Plasticity		
D	CE7TPE2D	Fracture of Concrete Structures		
E	CE7TPE2E	Advance Structural Analysis		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE7TPE3X	Professional Elective-3 (PE Group-3)	3	VII
A	CE7TPE3A	Environmental Geotechnical Engineering		
B	CE7TPE3B	Air Pollution Control Engineering		
C	CE7TPE3C	Industrial Waste Water Management		
D	CE7TPE3D	Water Resources Planning & Management		
E	CE7TPE3E	Environmental Impact Assessment		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE7TPE4X	Professional Elective-4 (PE Group-4)	3	VII
A	CE7TPE4A	Ground Water Hydrology		
B	CE7TPE4B	Ground Improvement Techniques		
C	CE7TPE4C	Geo-Informatics & GIS Applications		
D	CE7TPE4D	Rock Mechanics		
E	CE7TPE4E	Design of Hydraulic Structures		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE7TPE5X	Professional Elective-5 (PE Group-5)	3	VII
A	CE7TPE5A	Industrial Structures		
B	CE7TPE5B	Systems Analysis in Civil Engineering		
C	CE7TPE5C	Railway Engineering		
D	CE7TPE5D	Pavement Construction and Maintenance		
E	CE7TPE5E	Planning & Design of Building Services		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE8TPE6X	Professional Elective-6 (PE Group-6)	4	VIII
A	CE8TPE6A	Machine Foundation		
B	CE8TPE6B	Earthquake Geotechnical Engineering		
C	CE8TPE6C	Bridge Engineering		
D	CE8TPE6D	Solid and Hazardous Waste Management		
E	CE8TPE6E	Construction Equipment & Techniques		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE8TPE7X	Professional Elective-7 (PE Group-7)	3	VIII
A	CE8TPE7A	Air and Water Transportation		
B	CE8TPE7B	Theory of Plates & Shells		
C	CE8TPE7C	Repair and Rehabilitation of Structures		
D	CE8TPE7D	Finite Element Analysis		
E	CE8TPE7E	Hydropower Engineering		

List of Open Electives

Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE6TOE1X	Open Elective-1 (OE Group-1)	3	VI
A	CE6TOE1A	Construction Planning and Management		
B	CE6TOE1B	Rural Technology and Community Development		
C	CE6TOE1C	Engineering System Design Optimization		
D	CE6TOE1D	Engineering System Modelling and Simulation		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE7TOE2X	Open Elective-2 (OE Group-2)	3	VII
A	CE7TOE2A	Value Engineering		
B	CE7TOE2B	Supply Chain Management-Planning		
C	CE7TOE2C	Travel Demand Analysis		
D	CE7TOE2D	Quality Control Assurance and Safety in Construction		
Sl. No.	Subject Code	Name of Subject	Credits	SEMESTER
x	CE8TOE3X	Open Elective-3 (OE Group-3)	3	VIII
A	CE8TOE3A	Management Information System		
B	CE8TOE3B	Enterprise Resource Planning		
C	CE8TOE3C	Engineering Risk-Benefit Analysis		
D	CE8TOE3D	Fluid Dynamics		

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SYLLABUS	(SEMESTER-VI)								
Subject Code:	CE6TPE1X	CREDITS: 4			SESSIONAL - TA				ESE
Subject:	Professional Elective - 1X	L	T	P	CT	MSE	TA	TOTAL	
		3	1	-	10	20	10	40	60
Professional Elective-1A or Professional Elective-1B or Professional Elective-1C or Professional Elective-1D or Professional Elective-1E		Any one subject to be Selected from the Professional Electives (Group-1 i.e. CE5TPE1A or CE6TPE1B or CE6TPE1C or CEGTPE1D or CE6TPE1E)							
Professional Electives Group -1									
CE6TPE1A	Advanced Concrete Technology								
CE6TPE1B	Advanced Surveying								
CE6TPE1C	Advanced Concrete Design								
CE6TPE1D	Highway Safety								
CE6TPE1E	Advanced Fluid Mechanics								

SYLLABUS	(SEMESTER-VI)								
Subject Code:	CEGTPE1D	CREDITS: 4			SESSIONAL - TA				ESE
Subject:	Highway Safety	L	T	P	CT	MSE	TA	TOTAL	
		3	1	-	10	20	10	40	60

UNIT 1: Introduction to safety - Accident characteristics and factors: road – driver – vehicle-environment.

UNIT 2: Statistical Interpretation and Analysis of Crash Data - Accident recording and analysis.

UNIT 3: Advanced statistical methods, Crash Reconstruction - Driver behaviour and crash "causality", crash reporting and collision diagrams, basics of crash statistics, before-after methods in crash analysis.

UNIT 4: Road Safety Audits - Safety Programs, safety education, Traffic Law Enforcement. Elements of highway safety management systems, Safety countermeasures.

UNIT 5: Safety management process, Mitigation Measures - Crash Facts, Exclusive pedestrian signal phasing, Roadway lighting, pedestrian refuge islands and curb extension. Road Safety Management System.

Reading:

1. Institute of Transportation Engineers (ITE), The Traffic Safety Toolbox: A Primer on Traffic Safety, ITE, 1999.
2. Lynn B. Fricke, Traffic Accident Reconstruction, Northwestern University Center for Public Safety, 1990.
3. Ogden, K.W. Safer Roads: A Guide to Road Safety Engineering. Avebury Technical, 1996.
4. Rune Elvik and Truls Vaa, The Handbook of Road Safety Measures, Elsevier, 2004.
5. Leonard Evans, Traffic Safety, Science Serving Society, 2004.
6. Ezra Hauer, Observational Before-After Studies in Road Safety, Pergamon Press, 1997 (reprinted 2002).
7. Simon Washington, Matthew Karlaftis, and Fred Mannering, Statistical and Econometric Methods for Transportation Data Analysis, Chapman & Hall/CRC Press, 2003.
8. J. Stannard Baker, Traffic Collision Investigation, Northwestern University Center for Public Safety, 2002.
9. Lynn B. Fricke, Traffic Accident Reconstruction, Northwestern University Center for Public Safety, 1990.

SYLLABUS	(SEMESTER-VI)							
Subject Code:	CE6TOE1X	CREDITS:3			SESSIONAL - TA			ESE
Subject:	Open Elective -1X	L	T	P	CT	MSE	TA	TOTAL
		3	-	-	10	20	10	40	60

Open Elective-1A or Open Elective-1B or Open Elective-1C or Open Elective-1D	Any one subject to be Selected from the Open Electives Group (i.e. CE6TOE1A or CE6TOE1B or CE6TOE1C or CE6TOE1D)

Open Electives Group 1	
CE6TOE1A	Construction Planning and Management
CE6TOE1B	Rural Technology and Community Development
CE6TOE1C	Engineering System Design Optimization
CE6TOE1D	Engineering System Modelling and Simulation

SYLLABUS	(SEMESTER-VI)								
Subject Code:	CE6TOE1B	CREDITS : 3			SESSIONAL - TA				ESE
Subject:	Rural Technology and Community Development	L	T	P	CT	MSE	TA	TOTAL	
		3	-	-	10	20	10	40	60

UNIT 1: Data Analysis and Measures of Central Tendency- Meaning, nature, scope and limitations of statistics, collection of statistical data, classification, tabulation and diagrammatic representation of data, Measures of central tendency: Statistical averages Mean, Median, Mode.

UNIT 2: Data, Information and Knowledge; concept of Information, need of information (professional, educational, research), qualities of Information, value of Information, difference between data and information, properties of the needed Information. Information and Management; planning, organizing, co-ordinating and controlling.

UNIT 3: Concepts of marketing; difference between marketing selling and retailing; marketing mix, market-segmentation, marketing planning, strategy and approaches; modern concept of marketing.

UNIT 4: Community development; concept, definition, meaning, need, history, principles, objectives and scope. Community Building: Coming of Age, regenerating community, community model.

UNIT 5: Consensus Organizing Model, What's Behind Building Healthy Communities? , Participatory Democracy, The Role of various NGOs in Community Development. The Role of Business and Government in Community Development Initiatives. How to Form a Non-profit Corporation Fund Raising and Grant Writing.

TEXT/REFERENCE BOOKS:

1. Biddle, William Wishart. 1968. Encouraging Community Development: A Training Guide for Local Workers. New York: Holt, Rinehart and Winston.,
2. Clark, Kenneth B. and Jeannette Hopkins, eds. 1969. A Relevant War Against Poverty: A Study of Community Action Programs and Observable Social Change. New York: Harper and Row.
3. Clinard, Marshall Barron. 1970. Slums and Community Development: Experiments in Self-Help. New York: Free Press.,
4. Creevey, Lucy E., ed. 1986. Women Farmers in Africa: Rural Development in Mali and the Sahel. Syracuse, NY: Syracuse University Press.,
5. Dobyns, Henry F., Paul L. Doughty, and Harold D. Lasswell, eds. 1971. Peasants, Power, and Applied Social Change: Vicos as a Model. Beverly Hills, CA: Sage.
6. Edwards, Allen David and Dorothy G. Jones. 1976. Community and Community Development. The Hague, Netherlands: Mouton.,
7. Green, Tova and Peter Woodrow. 1994. Insight and Action: How to Discover and Support a Life of Integrity and Commitment to Change. Philadelphia, PA: New Society Publishers,
8. Heskin, Allen David. 1991. The Struggle for Community. Boulder, CO: West view Press.,
9. Kramer, Ralph M. and Harry Specht. 1975. Readings in Community Organization Practice. 2d ed. Englewood Cliffs, NJ: Prentice-Hall.,
10. Lean, Mary. 1995. Bread, Bricks, and Belief: Communities in Charge of Their Future. West Hartford, CT: Kumarian Press.,
11. Sustainable Rural Technology, by M.S. Virdi, Daya Publishing House, ISBN: 8170355656,
12. Rural Technology, (Paperback, Egnlish), by Punia Rd Roy, Publisher: Satya Prakashan (2009),
13. Rural Education And Technology, by S B Verma S K Jiloka , Publisher: Deep & Deep pvt. ltd (2006)

SYLLABUS	(SEMESTER-VI)							
Subject Code:	CE6TOE1C	CREDITS:3			SESSIONAL - TA			ESE
Subject:	Engineering System Design Optimization	L	T	P	CT	MSE	TA	TOTAL
		3	-	-	10	20	10	40

UNIT 1: Introduction- Optimization problem formulation, optimization algorithms, applications and examples, different optimization methods available.

UNIT 2: Single Variable optimization-Optimization criteria, bracketing methods – Exhaustive search method, Bound phase method; Region Elimination methods – Fibonacci search method, Golden search method; Gradient based methods – Newton Raphson method, Bisection method; Root finding using optimization technique.

UNIT 3: Multi objective optimization- Optimization criteria, Different search methods, Unidirectional search, Direct search method – Evolutionary optimization method, Powell's conjugate direction method; Gradient based methods – Newton's method and Variable metric method.

UNIT 4: Specialized Methods- Integer programming, Geometric programming, simulated annealing, Global optimization using - steep descent method, simulated annealing.

UNIT 5: Genetic algorithms and evolutionary approaches-Differences and similarities between genetic algorithms and traditional techniques, operators of GA's, Computer program for simulated annealing, Newton-Raphson method, Evolutionary optimization method.

TEXT BOOKS:
1. Kalyanmoy Deb, "Optimization for Engineering design", Prentice Hall, India, 2005.
2. Kalyanmoy Deb, "Multi objective optimization using Evolutionary algorithms", John Wiley, 2001.

REFERENCE BOOKS:
1. Taha, Operations Research, TMH 2010

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SYLLABUS (SEMESTER-VI)

Subject Code:	CE6TOE1D	CREDITS: 3			SESSIONAL - TA				ESE
Subject:	Engineering System Modelling and Simulation	L	T	P	CT	MSE	TA	TOTAL	
		3	-	-	10	20	10	40	60

UNIT 1: Introduction-Systems, System types, System Modelling, Types of system modelling, Classification and comparison of simulation models, attributes of modelling, Comparison of physical and computer experiments, Application areas and Examples

UNIT 2: Mathematical and Statistical Models- Probability concepts, Queuing Models, Methods for generating random variables and Validation of random numbers.

UNIT 3: Language-System modelling, programming languages, comparison of languages, Identifying and selection of programming language, feasibility study of programming language for the given application.

UNIT 4: Experiments-Simulation of different systems, Analysis, validation and verification of input and output simulated data, study of alternate techniques.

UNIT 5: Case study-Developing simulation model for information centres, inventory systems and analysis of maintenance systems.

TEXT BOOKS:

1. Geoffrey Gordon, "System Simulation", Second edition, Prentice Hall, India, 2002.
2. Jerry Banks and John S.Carson, Barry L.Nelson, David M.Nicol, "Discrete Event System Simulation", Third edition, Prentice Hall, India, 2002.

REFERENCE BOOKS:

1. Robert E. Shannon, "System Simulation The art and science", , Prentice Hall, New Jersey, 1995.
2. D.S. Hira, "System Simulation", S.Chand and company Ltd, New Delhi, 2001.

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