SONA COLLEGE OF TECHNOLOGY, SALEM-5

(An Autonomous Institution)

B.E- Civil Engineering

CURRICULUM and SYLLABI

[For students admitted in 2022-2023]

B.E / B.Tech Regulation 2019

Approved by BOS and Academic Council meetings

Sona College of Technology, Salem

(An Autonomous Institution)

Courses of Study for B.E/B. Tech. Semester I under Regulations 2019 (CBCS)

Branch: Civil Engineering

S.No	Course Code	Course Title	L	T	P	С	Category	Total Contact Hours
		Theory						
1	U19ENG101A/	English for Engineers - I	2,	0	2/	3 /	HS	60/
2	U19MAT102A	Linear Algebra and Calculus	3	1 (0	4/	BS	60/
3	U19PHY103A	Physics for Čivil Engineering	3 /	1,	0	4 /	BS	60/
4	U19CHE104A	Chemistry for Civil Engineering	3/	1,	0	4 /	BS	60/
5	U19EGR106	Engineering Graphics	2	0	2 /	3 /	ES	60 (30L+30P)
		Practical						
7	U19PCL108A	Physics and Chemistry Laboratory-I	0	0	3 /	1.5 /	BS	45 /
8	U19WPL112 /	Workshop Practice	0	0	2 /	1/	ES	30 /
9	U19GE101 /	Basic Aptitude-I	0	0	2 /	0 /	EEC	30 /
			Tota	al Cre	edits	20.5		
		Optional Language Elec	ctive*					
11	U19OLE1101 /	French /						30 /
12	U19OLE1102 /	German /	0	0	2	1	HS	30 /
13	U19OLE1103	Japanese	U	U	- 1	1	115	30

^{*}Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

Approved By

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Chairperson, Science and Humanities BoS	Chairperson, Civil Engineering BoS	Member Secretary, Academic Council	Chairperson, Academic Council & Principal
Dr. M. Renuga	Dr. R. Malathy	Dr. R. Shivakumar	Dr. S. R. R. Senthil Kumar

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Sona College of Technology, Salem - 636 005

(An Autonomous Institution)

Courses of Study for BE / B Tech Semester II under Regulations 2019 (CBCS)

	1	Branch: Civil En	gineer	ing				
S.N	Course Code	Course Title	L	Т	P	С	Category	Total Contact Hours
		The	ory					
1	U19TAM201	தமிழர் மரபு / Heritage of Tamils	1	0	0	1	HSMC	15
2	U19ENG201A	English for Engineers-II	2	0	2	3	HSMC	60 (30L+30P)
3	U19MAT202A	Differential Equations and Vector Calculus	3	1	0	4	BSC	60
4	U19PPR205	Problem Solving Using Python Programming	3	0	0	3	ESC	45
5	U19BEE206	Basics of Electrical and Electronics Engineering	3	0	0	3	ESC	45
6	U19CE201	Basics of Engineering Mechanics	3	1	0	4	ESC	60
		Prac	tical		•			
7	U19BEE207	Basics of Electrical Engineering Laboratory	0	0	2	1	ESC	30
8	U19PCL208A	Physics and Chemistry Laboratory-II	0	0	3	1.5	BSC	45
9	U19PPL211	Python Programming Laboratory	0	0	2	1	ESC	30
10	U19GE201	Basic Aptitude-II	0	0	2	0	EEC	. 30
	4		T	otal Cı	edits	21.5		
	Optional Lang	uage Elective*						
11	U19OLE1201	French						
12	U19OLE1202	German	0	0	2	1	HSMC	30
12	THEORY ELECA	_	J	"	-	1	TISMIC	30

^{*}Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

Approved by

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Chairperson, Science and Humanities BoS	Chairperson, Civil Engineering BoS	Member Secretary, Academic Council	Chairperson, Academic Council & Principal
Dr. M. Renuga	Dr. R. Malathy	Dr. R. Shivakumar	Dr. S. R. R. Senthil Kuman

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Sona College of Technology, Salem

(An Autonomous Institution)

Courses of Study for B.E. / B.Tech. Semester III Regulations 2019

Branch: Civil Engineering

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Military States	<u> </u>	Theory		the contract of the second second second	Lucios de la composición del composición de la c	para and a state of the state o	
1	U19MAT301A	Fourier Analysis and Statistics	3	1	0	4	60 /
2	U19CE301/	Mechanics of Fluids	2	1	0	3	45
3	U19CE302	Strength of Materials -I	2	1	0	3	45
4	U19CE303	Construction Materials and Practices	3	0	0	3	45
5	U19CE304	Surveying	3	0	0	3	45
6	U19TAM301 /	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	1	0	0	1	15
7	U19GE302	Mandatory Courses: Environment and Climate Science	2	0	0	0	30 /
		Practical		d			
8	U19CE305	Materials Testing Laboratory	0	0	2	1	30
9	U19CE306/	Survey Laboratory	0	0	2	1	30
10	U19ENG301	Communication Skills Laboratory	0	0	2	1	30
11	U19GE301 /	Soft Skills and Aptitude-I	0	0	2	1	30
Andrew Control of the	l Armania San Caranta Ligar			T	otal Credits	21	405

ApprovedBy

Chairperson, Civil Engineering BoS Dr.R.Malathy Member Secretary, Academic Council Dr.R.Shivakumar Chairperson, Academic Council & Principal Dr.S.R.R.Senthil Kumar

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HOD/Civil Engineering, Third Semester BE Civil Students and Staff, COE

Sona College of Technology, Salem (An Autonomous Institution) Courses of Study for B.E. / B.Tech.Semester IV under Regulations 2019



Branch: Civil Engineering

S, No	o Course Code Course Title		Lecture	Tutorial	Practical	Credit	Total Contact Hours
Service Cond		Theory		<u> </u>	4		
1	U19CE401	Environmental Engineering	3	0	0	3	45
2	U19CE402 /	Strength of Materials-II	2	1	0	3	45 /
3	U19CE403	Transportation Engineering	3	0	0	3	45
4	U19CE404 /	Concrete Technology	3	0	0	3	45
	U19CE903 /	Professional Elective - Elements of Building Planning	Jan Adamson Commission (Commission Commission Commissio			7 75	***********
•	U19CE904	Professional Elective - Energy Efficiency and Green Building	3 0	0	0	3	45
6	U19GE403 /	Mandatory Courses - Essence of Indian Traditional Knowledge	2	0	0	0	30 /
		Practical					DE SOULO
7 /	U19CE405 /	Fluid Mechanics Laboratory	0	0	2	1	30
8	U19CE406	Concrete and Highway Laboratory	0	Ó	2	1	30 /
9	U19CE407 /	Environmental Engineering Laboratory	0	0	2	1	30
10	U19GE401	Soft Skills and Aptitude-II	0	0	2	1	30 /
270				**************************************	Total Credits	19/	375

ApprovedBy

Chairperson, Civil Engineering BoS Dr.R.Malathy

Dr.R.Shivakumar

Member Secretary, Academic Council 9.1.24

Chairperson, Academic Council & Principal Dr.S.R.R.Senthil Kumar

Copy to:-

HOD / Civil Engineering, Fourth Semester BE Civil Students and Staff, CO

SONA COLLEGE OF TECHNOLOGY (Autonomous), SALEM-636 005. DEPARTMENT OF CIVIL ENGINEERING CURRICULUM - R2019 LIST OF ELECTIVE COURSE

	PROFESSIONAL ELECTIVE-I (Semester – 4)										
S.No	COURSE CODE	COURSE TITLE	L	T	P	C					
1.	U19CE901	Application of IoT for Civil Engineering	3	0	0	3					
2.	U19CE902	Advanced Surveying	3	0	0	3					
3.	U19CE903	Elements of Building Planning	3	0	0	3					
4.	U19CE904	Energy Efficiency and Green Building	3	0	0	3					

	PROFESSIONAL ELECTIVE-II & III (Semester – 5)											
S.No	COURSE CODE	COURSE TITLE	L	T	P	C						
1.	U19CE905	Remote Sensing and GIS	3	0	0	3						
2.	U19CE906	Housing Planning and Management	3	0	0	3						
3.	U19CE907	Architecture and Town Planning	3	0	0	3						
4.	U19CE908	Building Services and Safety Regulations	3	0	0	3						
5.	U19CE909	Construction Practices and Equipments	3	0	0	3						
6.	U19CE910	Municipal Solid Waste Management	3	0	0	3						
7.	U19CE911	Railway, Airport and Harbour Engineering	3	0	0	3						
8.	U19CE912	Air Pollution Management	3	0	0	3						

	PROFESSIONAL ELECTIVE-IV & V (Semester – 6)											
S.No	COURSE CODE	COURSE TITLE	L	T	P	C						
1.	U19CE913	Smart Structures and Smart Materials	3	0	0	3						
2.	U19CE914	Design of RC Structures	3	0	0	3						
3.	U19CE915	Industrial Waste Water Engineering	3	0	0	3						
4.	U19CE916	Repair and Rehabilitation of Structures	3	0	0	3						
5.	U19CE917	Prefabricated Structures	3	0	0	3						
6.	U19CE918	Ground Improvement Techniques	3	0	0	3						
7.	U19CE919	Pavement Engineering	3	0	0	3						
8.	U19CE920	Traffic Engineering and Management	3	0	0	3						

	PROFESSI	ONAL ELECTIVE-VI & VII (Semester – 7)				
S.No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	U19CE921	Advanced Design of Steel Structures		0	0	3
2.	U19CE922	Bridge Engineering	3	0	0	3
3.	U19CE923	Groundwater Hydrology	3	0	0	3
4.	U19CE924	Prestressed Concrete Structures	3	0	0	3
5.	U19CE925	Disaster Management	3	0	0	3
6.	U19CE926	Contracts Laws and regulations	3	0	0	3
7.	U19CE927	Environmental Impact Assessment	3	0	0	3
8.	U19CE928	Structural health Monitoring	3	0	0	3
9.	U19CE929	Project Management for Engineers	3	0	0	3
10.	U19CE930	Formwork Engineering	3	0	0	3
11.	U19CE931	Building Information & Modeling	3	0	0	3

SONA COLLEGE OF TECHNOLOGY, SALEM-5

DEPARTMENT OF CIVIL ENGINEERING

LIST OF PROFESSIONAL ELECTIVES FOR HONORS DEGREE

Date: 11.05.2023

S.No	Vertical 1: ADVANCED SURVEYING	Vertical 2: CONSTRUCTION ENGINEERING AND MANAGEMENT	Vertical 3: ENVIRONMENTAL ENGINEERING	Vertical 4: ENERGY EFFICIENCY AND GREEN BUILDING	Vertical 5: STRUCTURAL ENGINEERING
1.	BASICS OF REMOTE SENSING, GIS, GNSS AND ITS APPLICATIONS *	SCHEDULING METHODS IN CONSTRUCTION	INTEGRATED WATER RESOURCES MANAGEMENT	ENERGY EFFICIENCY ACOUSTICS AND DAYLIGHT IN BUILDING*	BRIDGE ENGINEERING *
2.	DIGITAL LAND SURVEYING AND MAPPING *	MATERIALS MANAGEMENT	APPLIED ENVIRONMENTAL MICROBIOLOGY*	ENERGY RESOURCES, ECONOMICS AND ENVIRONMENT*	STRUCTURAL HEALTH MONITORING
3.	GEOINFORMATICS SYSTEM	RESOURCE MANAGEMENT IN CONSTRUCTION	PLASTIC AND ELECTRONIC DEBRIS MANAGMENT	GREEN BUILDING RATING SYSTEMS	FORMWORK ENGINEERING
4.	DRONE SURVEYING	CONSTRUCTION PROJECT MANAGEMENT	ENVIRONMENTAL MODELLING	ENVIRONMENTAL IMPACT ASSESSMENT	BRICK MASONRY STRUCTURES
5.	ELECTRONIC DISTANCE MEASUREMENT FOR SURVEYING	CONSTRUCTION PERSONNEL MANAGEMENT	NANOTECHNOLOGY FOR ENVIRONMENTAL ENGINEERING	GREEN MATERIALS AND GREEN PRODUCTS	TALL BUILDING STRUCTURES
6.	INTRODUCTION TO QUADCOPTERS	INDUSTRIAL SAFETY ENGINEERING *	GEOENVIRONMENTAL ENGINEERING	ENERGY AND WATER EFFICIENCY IN BUILDINGS	STRUCTURAL DYNAMICS *
7.	ADVANCED REMOTE SENSING	FORMWORK ENGINEERING	ENVIRONMENTAL RESTORATION OF POLLUTED SITES*	GREEN BUILDING AND SUSTAINABLE MATERIALS	EXPERIMENTAL STRESS ANALYSIS
8.	TACHOMETRIC AND MODERN SURVEYING	PROJECT MANAGEMENT FOR MANAGERS *	ENVIRONMENTAL LEGISLATION	GREEN TECHNOLOGIES	MECHANICS OF COMPOSITE MATERIALS
9.	-	VALUATION FOR ENGINEERS	-	-	_

^{*}In each vertical, maximum of two NPTEL courses were identified

SONA COLLEGE OF TECHNOLOGY, SALEM-5

Department of Civil Engineering

Honours Verticals & Courses

Offered to UG students admitted during AY 2021- 2022 onwards, Regulation 2019

Vertical 1: ADVANCED SURVEYING

S.No	Course Code	Course Name	L	T	Р	С
1	NPTEL	BASICS OF REMOTE SENSING, GIS, GNSS AND ITS APPLICATIONS *				
2	NPTEL	DIGITAL LAND SURVEYING AND MAPPING *				
3	U19CE2001	GEOINFORMATICS SYSTEM	3	0	0	3
4	U19CE2002	DRONE SURVEYING	3	0	0	3
5	U19CE2003	ELECTRONIC DISTANCE MEASUREMENT FOR SURVEYING	3	0	0	3
6	U19CE2004	INTRODUCTION TO QUADCOPTERS	3	0	0	3
7	U19CE2005	ADVANCED REMOTE SENSING	3	0	0	3
8	U19CE2006	TACHOMETRIC AND MODERN SURVEYING	3	0	0	3

Vertical 2: CONSTRUCTION ENGINEERING AND MANAGEMENT

S.No	Course Code	Course Name	L	T	Р	С
1	U19CE2007	SCHEDULING METHODS IN CONSTRUCTION	3	0	0	3
2	U19CE2008	MATERIALS MANAGEMENT	3	0	0	3
3	U19CE2009	RESOURCE MANAGEMENT IN CONSTRUCTION	3	0	0	3
4	U19CE2010	CONSTRUCTION PROJECT MANAGEMENT	3	0	0	3
5	U19CE2011	CONSTRUCTION PERSONNEL MANAGEMENT	3	0	0	3
6	NPTEL	INDUSTRIAL SAFETY ENGINEERING *				
7	U19CE930	FORMWORK ENGINEERING	3	0	0	3
8	NPTEL	PROJECT MANAGEMENT FOR MANAGERS *				
9	U19CE2012	VALUATION FOR ENGINEERS	3	0	0	3

Vertical 3: ENVIRONMENTAL ENGINEERING

S.No	Course Code	Course Name	L	Т	Р	С
1	U19CE2013	INTEGRATED WATER RESOURCES MANAGEMENT	3	0	0	3
2	NPTEL	APPLIED ENVIRONMENTAL MICROBIOLOGY*				
3	U19CE2014	PLASTIC AND ELECTRONIC DEBRIS MANAGMENT	3	0	0	3
4	U19CE2015	ENVIRONMENTAL MODELLING	3	0	0	3
5	U19CE2016	NANOTECHNOLOGY FOR ENVIRONMENTAL ENGINEERING	3	0	0	3
6	U19CE2017	GEOENVIRONMENTAL ENGINEERING	3	0	0	3

	7	NPTEL	ENVIRONMENTAL RESTORATION OF POLLUTED SITES*				
ĺ	8	U19CE2018	ENVIRONMENTAL LEGISLATION	3	0	0	3

Vertical 4: ENERGY EFFICIENCY AND GREEN BUILDING

S.No	Course Code	Course Name	L	T	Р	С
1	NPTEL	ENERGY EFFICIENCY ACOUSTICS AND DAYLIGHT IN BUILDING*				
2	NPTEL	ENERGY RESOURCES, ECONOMICS AND ENVIRONMENT*				
3	U19CE2019	GREEN BUILDING RATING SYSTEMS	3	0	0	3
4	U19CE927	ENVIRONMENTAL IMPACT ASSESSMENT	3	0	0	3
5	U19CE2020	GREEN MATERIALS AND GREEN PRODUCTS	3	0	0	3
6	U19CE2021	ENERGY AND WATER EFFICIENCY IN BUILDINGS	3	0	0	3
7	U19CE2022	GREEN BUILDING AND SUSTAINABLE MATERIALS	3	0	0	3
8	U19CE2023	GREEN TECHNOLOGIES	3	0	0	3

Vertical 5: STRUCTURAL ENGINEERING

S.No	Course Code	Course Name	L	Т	Р	С
1	NPTEL	BRIDGE ENGINEERING *				
2	U19CE928	STRUCTURAL HEALTH MONITORING	3	0	0	3
3	U19CE930	FORMWORK ENGINEERING	3	0	0	3
4	U19CE2024	BRICK MASONRY STRUCTURES	3	0	0	3
5	U19CE2025	TALL BUILDING STRUCTURES	3	0	0	3
6	NPTEL	STRUCTURAL DYNAMICS *				
7	U19CE2026	EXPERIMENTAL STRESS ANALYSIS	3	0	0	3
8	U19CE2027	MECHANICS OF COMPOSITE MATERIALS	3	0	0	3

^{*} These Courses are available in NPTEL

SONA COLLEGE OF TECHNOLOGY, SALEM-5

Department of Civil Engineering

Minor Degree - Verticals & Courses

(Offered to UG students admitted during AY 2021- 2022 onwards, Regulation 2019)

MINOR VERTICAL: ENERGY EFFICIENCY AND GREEN BUILDING

S.No	Course Code	Course Name	L	T	Р	С
1	NPTEL	ENERGY EFFICIENCY ACOUSTICS AND DAYLIGHT IN				
		BUILDING*				
2	NPTEL	ENERGY RESOURCES, ECONOMICS AND				
		ENVIRONMENT*				
3	U19CE2019	GREEN BUILDING RATING SYSTEMS	3	0	0	3
4	U19CE927	ENVIRONMENTAL IMPACT ASSESSMENT	3	0	0	3
5	U19CE2020	GREEN MATERIALS AND GREEN PRODUCTS	3	0	0	3
6	U19CE2021	ENERGY AND WATER EFFICIENCY IN BUILDINGS	3	0	0	3
7	U19CE2022	GREEN BUILDING AND SUSTAINABLE MATERIALS	3	0	0	3
8	U19CE2023	GREEN TECHNOLOGIES	3	0	0	3

^{*} These Courses are available in NPTEL

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Branch: Civil Engineering

S.No	Course Code	Course Title	L	T	P	С	Category	Total Contact Hours
		Theory						
1	U19ENG101A/	English for Engineers - I	2,	0	2/	3 /	HS	60/
2	U19MAT102A	Linear Algebra and Calculus	3	1 (0	4/	BS	60/
3	U19PHY103A	Physics for Čivil Engineering	3 /	1,	0	4 /	BS	60/
4	U19CHE104A	Chemistry for Civil Engineering	3/	1,	0	4 /	BS	60/
5	U19EGR106	Engineering Graphics	2	0	2 /	3 /	ES	60 (30L+30P)
		Practical						
7	U19PCL108A	Physics and Chemistry Laboratory-I	0	0	3 /	1.5 /	BS	45 /
8	U19WPL112 /	Workshop Practice	0	0	2 /	1/	ES	30 /
9	U19GE101 /	Basic Aptitude-I	0	0	2 /	0 /	EEC	30 /
			Tota	al Cre	edits	20.5		
		Optional Language Elec	ctive*					
11	U19OLE1101 /	French /						30 /
12	U19OLE1102 /	German /	0	0	2	1	HS	30 /
13	U19OLE1103	Japanese	U	U	- 1	1	115	30

^{*}Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

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U19ENG101A English for Engineers - I

First year I semester

Common to CIVIL Branch

Course Outcome: At the end of course, the students will be able to

- 1. Use grammatical components effectively in both written and spoken communication
- Develop speaking skills for self-introduction, delivering speeches and technical presentation.
- 3. Speak effectively in real time and business situations
- 4. Write email, formal letters and descriptions of graphics
- Develop skills for writing reports and proposals, and for general purpose and technical writing

-	witting.														
	COURSE OUTCOMES				P	ROC	GRAI	име	OUT	СОМ	ES				
	Use grammatical	1	2	3	4	5	6	7	8	9	10	11	12	Ps o1	Ps o2
1	components effectively in both written and	2	1	1	1	1	2	3	2	2	3	3	3	3	3
2	Develop speaking skills for self- introduction, delivering speeches and technical	3	2	2	3	3	3	3	2	2	3	3	3	3	3
3	Speak effectively in real time and business situations	3	3	2	3	3	3	3	2	3	3	3	3	3	3
4	Write email, formal letters and descriptions of graphics	1	1	1	2	2	1	2	2	1	3	1	1	1	1
5	Develop skills for writing reports and proposals, and for general purpose and technical writing.	2	1	1	3	2	2	3	3	3	3	2	3	3	3

UNIT-I

- General Vocabulary, Parts of speech
- Self-introduction, personal information, name, home background, study details, area of
 interest, hobbies, strengths and weaknesses, projects and paper presentations, likes and
 dislikes in food, travel, clothes, special features of home town.
- Instructions, Email, fixing an appointment, cancelling appointments, conference details, hotel accommodation, order for equipment, training programme details, paper submission for seminars and conferences
- Paragraph writing describing defining providing examples or evidences

UNIT II

- Tenses, active and passive voice
- Welcome address, vote of thanks, special address on specific topic.
- · Checklists, letter writing, business communication, quotations, placing orders, complaints, replies to queries from business customers, inviting dignitaries, accepting and declining invitations, detailed project report

UNIT - III

- · Prefixes and Suffixes
- Mini presentation in small groups of two or three, office arrangements, facilities, office functions, sales, purchases, training recruitment, advertising, applying for financial assistance, applying for a job, team work, discussion, presentation.
- Job application letter and resume, recommendations

UNIT - IV

- Modal verbs and probability, concord
- Situational Role Play between examiner and candidate, teacher and student, customer and sales manager, hotel manager and organiser, team leader and team member, bank manager and candidate, interviewer and applicant, car driver and client, industrialist and candidate, receptionist and appointment seeker, new employee and manager, employee and employee, p.a. and manager, schedule for training
- · Note making, Proposal, drafting circulars

UNIT-V

- If conditionals
- · Asking for directions, seeking help with office equipment, clarifying an error in the bill, job details, buying a product, selling a product, designing a website, cancelling and fixing appointments, hotel accommodation, training facilities, dress code, conference facilities.
- Memo, technical report writing, feasibility reports, accident report, survey report
- Preparing abstracts for technical articles

TOTAL: 60 hours Speaking test will be conducted for 20 marks externally and evaluated along with English for Engineers - I in the End Semester Valuation.

TEXT BOOK:

Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016

Extensive Reading

- 1. The Story of Amazon.com- Sara Gilbert, published by Jaico
- 2. The Story of Google Sara Gilbert, published by Jaico

Reference

Norman Whitby, Business Benchmark - Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.

A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

> Dr. M.RENUGA. Professor & Head, Department of Humanities & Lang Sona College of Technology. SALEM - 636 005.

B. E. / CIVIL ENGINEERING

SEMESTER - I		LI	T	P	С
U19MAT102A	LINEAR ALGEBRA AND CALCULUS	3	1	0	4

COURSE OUTCOMES

At the end of the course, the students will be able to

- 1. find the rank of the matrix and solve linear system of equations by direct and indirect methods
- 2. apply the concepts of vector spaces and linear transformations in real world applications
- apply the concepts of eigen values and eigen vectors of a real matrix and their properties in diagonalization and the reduction of a real symmetric matrix from quadratic form to canonical form
- 4. find the Taylor's series expansion, Jacobians and the maxima and minima of functions of two variables
- 5. apply appropriate techniques of multiple integrals to find the area and volume.

		(3/2/1 i	ndicate	s stren	CO/ gth of	PO, P.	SO Ma tion) 3	pping -Stron	g, 2-Me	dium, 1	-Weak		
		and the	Prog	ramme	Outco	mes (P	Os) an	d Prog	ramme	e Specifi	ic Outco	me (PS	Os)	
COs	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	POH	PO12	PSO1	PSO2
COI	3	3	2	3	2							2	2	
CO2	3	3	2	3	2		THE RESERVE OF THE PERSON NAMED IN	15				2	2	
CO3	3	3	2	3	2							2	2	
CO4	3	3	2	3	2			0.00				2	2	
CO5	3	3	2	3	2							2	2	

UNIT-1 LINEAR SYSTEM OF EQUATIONS .

12

Rank of a matrix - Solution of linear system of equations by matrix method, Gauss elimination, Gauss-Jordan, Gauss-Jacobi and Gauss-Seidel methods.

UNIT - II VECTOR SPACES

12

Vector Space - Linear independence and dependence of vectors - Basis - Dimension - Linear transformations (maps) - Matrix associated with a linear map - Range and kernel of a linear map - Rank-nullity theorem (without proof).

UNIT - III EIGEN VALUES AND EIGEN VECTORS

12

Eigen values and eigen vectors of real matrices - Properties of eigen values and eigen vectors - Cayley-Hamilton theorem - Diagonalization of real symmetric matrices - Reduction of quadratic form to canonical form.

UNIT-IV MULTIVARIABLE CALCULUS

12

Functions of several variables - Partial differentiation - Total derivative - Jacobians - Taylor's theorem for function of two variables - Maxima and minima of function of two variables without constraints - Constrained maxima and minima by Lagrange's method of undetermined multipliers.

UNIT - V MULTIPLE INTEGRALS

12

Double integrals - Change of order of integration - Change of variables from Cartesian to polar coordinates - Area as double integrals in Cartesian coordinates - Triple integrals - Volume as triple integrals in Cartesian coordinates.

Theory: 45 Hours

Tutorial: 15 Hours

Total: 60 Hours

TEXT BOOKS:

- T. Veerarajan, "Linear Algebra and Partial Differential Equations", McGraw Hill Publishers, 1st Edition, 2018.
- T. Veerarajan, "Engineering Mathematics for Semesters 1 & 1Γ', McGraw Hill Publishers, 1st Edition, 2019.

REFERENCE BOOKS:

- 1. S. Lipschutz and M. L. Lipson, "Linear Algebra", McGraw Hill Publishers, 6th Edition, 2018.
- E. Kreyszig, "Advanced Engineering Mathematics", Wiley Publishers, 10th Edition, Reprint, 2017.
- C. Prasad and R. Garg, "Advanced Engineering Mathematics", Khanna Publishers, 1st Edition, 2018.
- 4. B. V. Ramana, "Higher Engineering Mathematics", McGraw Hill Publishers, 29th Reprint, 2017.
- 5. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 44th Edition, 2018.

Prof. S. JAYABHARATHI

won

Head / Department of Mathematics Sona College of Technology Salem - 636 005 Dr. M. RENUGA

BoS - Chairperson Science and Humanities Sona College of Technology

Salem - 636 005

Course Code:

U19PHY103A

LTPC

Course Name:

PHYSICS FOR CIVIL ENGINEERING

3 1 0 4 100

(For I Semester B.E. Civil Engineering)

COURSE OUTCOMES:

At the end of the course, the students will be able to,

CO1 Discuss the dual nature of matter and radiation.

CO2 Describe the basic components of lasers.

CO3 Analyse the relation between arrangement of atoms and material properties.

CO4 Evaluate the factors affecting architectural acoustics of buildings.

CO5 Elucidate the different modes of heat transfer.

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			Progra	ımme C	Outcom	es (POs) and Pr	ogramı	ne Spe	cific O	utcome (PSOs)	Trans.	alt I
COs, POs PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09		PO11	PO12	PSO1	PSO2
Mapping														
CO-1	3	2	-	-	-	-	-	-	-	-	2	2 ,		3
CO-2	3	2	-	-	-	-	-	-	•	-	2	2	-	3
CO – 3	3	2		-	-	100 -	-	-	-	-	2	2		3
CO-4	3	2	-	-	1,41	-	•	-	-	-	2	2	(-)/-	3
CO-5	3	2	17.	-	- 1.		-	-	-	-	2	2	-	3

Unit 1 Quantum Physics

12

Origin of quantum mechanics – Limitations of classical theory - Dual nature of matter and radiation.

Particle nature of radiation - Compton Effect -Explanation based on quantum theory-Expression for Compton shift (no derivation).

Wave nature of matter - de Broglie waves - Schrödinger's time independent and time dependent wave equations - Physical significance of wave function - Energy and wave function of an electron trapped in one dimensional box.

Application of wave nature of particles - Electron microscope - Comparison of optical and electron microscope - Scanning electron microscope - Transmission electron microscope-Limitations of electron microscope.

Unit 2 Lasers

Basic terms - Energy level - normal population - induced absorption (pumping) - population inversion - meta stable state - spontaneous emission - stimulated emission.

Basic components of a laser - Active medium - pumping technique - optical resonator Einstein's theory - Stimulated absorption - spontaneous emission and stimulated emission.

Types of lasers - Solid lasers (Nd:YAG) - Gas lasers (CO₂ laser) - semiconductor laser (homojunction and hetero junction laser).

Applications - Holography - Construction and reconstruction of hologram - Applications of lasers in science and Engineering.

Unit 3 Crystal Physics

12

Importance of crystals - Types of crystals - Basic definitions in crystallography (Lattice - space lattice - unit cell - lattice parameters - basis - crystallographic formula) - Seven crystal systems and fourteen Bravais lattices - Lattice planes and Miller indices - Interplanar distance - d spacing in cubic lattice - Calculation of number of atoms per unit cell - Atomic radius - Coordination number and Atomic Packing factor for SC, BCC, FCC and HCP Structures - Polymorphism and allotropy.

Crystal imperfections - Point, line and surface defects - Burger vector.

Crystal Structure - Graphite Structure, Diamond Structure.

Unit 4 Architectural Acoustics

12

Classification of sound waves: Audible sound waves, Infrasonic waves, Ultrasonic waves-Noise and musical sound-Weber – Fechner law-Loudness level and intensity.

Basic requirements for the acoustically good halls- Reverberation -Sabine's law and its importance (no derivation)-absorption co-efficient-Factors affecting the acoustics and their remedies.

Sound insulation: Noise classification-Transmission loss-Sound insulation between individual rooms.

Unit 5 Thermal Physics

12

Heat and temperature - Modes of heat transfer (Conduction, convection and radiation) -Specific heat capacity - thermal capacity and coefficient of linear thermal expansion. Thermal conductivity - Measurement of thermal conductivity of good conductor - Forbe's method - Measurement of thermal conductivity of bad conductor - Lee's disc method - Radial flow of heat - Cylindrical flow of heat - Practical applications of conduction of heat -Thermal insulation in buildings.

Thermal radiations - Properties of thermal radiations - Applications of thermal radiations.

Lecture: 45, Tutorial: 15, Total: 60 Hours

Text Book:

- 1. B. K. Pandey and S. Chaturvedi, "Engineering Physics", Cengage Learning India Pvt. Ltd., Delhi, 2012.
- 2. Dr. B.C. Punmia et al, "Building construction", Laxmi publications Pvt. Ltd., New Delhi 2008.

References:

- 1. Engineering Physics, Sonaversity, Sona College of Technology, Salem (Revised Edition 2018).
- 2. Rajendran, V, and Marikani A, 'Materials science' TMH Publications, (2004) New
- 3. Palanisamy P.K, 'Materials science', SciTech Publications (India) Pvt. Ltd., Chennai, Second Edition (2007)

Dr. C. Shanthi

HOD / Science

Dr. C. SHANTHI, M.Sc., M.E., Ph.D., Professor of Physics Head, Department of Sciences Sona College of Technology (Autono: CALEM. POO

I SEMESTER (CIVIL)

COURSE CODE	U19CHE104A	LTPC
COURSE NAME	CHEMISTRY FOR CIVIL ENGINEERING	3104

Course outcome:

At the end of the course the students will be able to

- **CO1** Analyze the impurities of water, their removal methods and explain the conditioning methods for domestic and industrial uses.
- CO2 Outline the principles, applications of electrochemistry, types of corrosion and its control methods.
- CO3 Compare the types of polymerization reactions, techniques and fabrication methods of polymers.
- CO4 Analyze the composition, properties and industrial applications of engineering materials.
- CO5 Describe the ingredients, manufacture, properties and applications of construction materials.

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COs, POs PSOs Mapping	-A	PO2	P03	PO4	PO5	P06	P07	PO8	PO9 PO10	PO11	PO12	PSO1	PSO2
CO - 1	3	3											3
CO - 2	3	3											2
CO - 3	3	3											3
CO - 4	3	3											3
CO - 5	3	3											3

UNIT I WATER TECHNOLOGY

12

Introduction - Characteristics - hardness - estimation of hardness by EDTA method, alkalinity and its estimation - Boiler feed water - requirements - disadvantages of using hard water in boilers - internal conditioning (colloidal, phosphate, calgon and carbonate conditioning methods) - external conditioning - zeolite process, demineralization process, desalination of brackish water by reverse osmosis - Domestic water treatment - screening, sedimentation, coagulation, aeration, sand filtration and disinfection methods - Chlorination, ozonation and UV treatment.

UNIT II ELECTROCHEMISTRY AND CORROSION

12

Electrode potential – Nernst Equation – derivation and problems based on single electrode potential calculation – reference electrodes – standard hydrogen electrode – calomel electrode – Ion selective electrode – glass electrode – measurement of pH – electrochemical series – significance – electrolytic and electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – potentiometric titrations (redox – Fe²⁺ vs dichromate) – conductometric titrations (acid-base – HCl vs NaOH) – Corrosion – types – dry and wet corrosion – examples – Corrosion control methods – Sacrificial anode and impressed cathode current method.

UNIT III POLYMER CHEMISTRY

12

Nomenclature of Polymers - classification of Polymers - functionality - types of polymerization-addition-condensation and copolymerization - Free Radical mechanism of addition Polymerization - Properties of Polymers - glass transition temperature, Tg -Methods of Polymerization-bulk-solution-emulsion and suspension - Plastics - Moulding constituents of plastic - Moulding of plastics into articles-Injection-Compression and Blow moulding - Thermoplastic and Thermosetting resins - Engineering Plastics-Nylon 6,6-Polycarbonate and Polyurethane-preparation-properties and applications - Rubberstypes-applications-vulcanization of rubber.

UNIT IV CHEMISTRY OF ENGINEERING MATERIALS

12

Refractories - classification - acidic, basic and neutral refractories - properties (refractoriness, refractoriness under load, dimensional stability, porosity, thermal spalling). Abrasives - natural and synthetic abrasives - quartz, corundum, emery, garnet, diamond, silicon carbide and boron carbide. Lubricants - mechanism of lubrication, liquid lubricants, - properties - (viscosity index, flash and fire points, cloud and pour points, oiliness) - solid lubricants - graphite and molybdenum sulphide. Composites - definition, constituents of composites - composition, properties and applications of various fibre reinforced polymer (FRP) composites.

UNIT V CHEMISTRY OF BUILDING MATERIALS

12

Lime - classification - manufacture and properties of lime - Cement - classification -Portland cement - chemical composition - manufacture of Portland cement by wet method - setting and hardening - analysis of cement - concretes - hot and cold weathering of concrete, cement and its prevention methods - special cements - gypsum - plaster of Paris - Glass - manufacture, types, properties and uses - Recent trends in construction materials - special paints and their applications in construction sector.

TOTAL: 60 HOURS

Text Books:

- 1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi, 17th Edition, 2018.
- 2. S. Kalaiarasan et al, "Chemistry For Civil Engineering" Sonaversity, Sona College of Technology, Salem, 2019.

Reference Books:

- 1. O G Palana, Engineering Chemistry", Tata McGraw Hill Education (India) Private Limited, Chennai, Second Edition, 2017.
- 2. B. Sivasankar, "Engineering Chemistry", Tata McGraw-Hill Pub. Co. Ltd., New Delhi (2008).
- 3. B.K. Sharma, "Engineering Chemistry", Krishna Prakasan Media (P) Ltd., Meerut (2001).
- 4. N. Krishnamurthy, K. Jeyasubramanian and P. Vallinayagam, "Applied Chemistry", Tata McGraw-Hill Publishing Company Limited, New Delhi (1999).

CS-W Dr. C. Shanthi

HOD/Sciences

Dr. C. SHANTHI, M.Sc., M.E., Ph.D., Professor of Physics

Head, Department of Sciences Sona College of Technology (autonomous)

B.E / B.Tech Regulation 2019

30.06.2022

COURSE CODE

U19EGR106

LTPC

COURSE NAME

ENGINEERING GRAPHICS

2023

Course Outcomes

Upon completion of this course the students will be able to

- Predict the construction of various curves in civil elevation, plan and machine components.
- CO2 Analyze the principles of projection of various planes by different angle to project points, lines and planes.
- CO3 Draw the principles of projection of simple solid by the axis is inclined to one reference plane by change of position method.
- CO4 Analyze the interior details of complex components, machineries by sectioning the solid body. Study the development of surfaces for prisms and pyramids.
- CO5 Draw the projection of three dimensional objects representation of machine structure and explain standards of orthographic views by different methods.

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COs, POs PSOs Mapping	Prog	PO2	PO3	PO4	PO5	P06	Prog PO7	PO8	PO9	PO10	PO11	(PSOs) PO12	PS01	PSO2
CO 1	3	2	2	1	1	1	1	1	3	2	2	3	2	2
CO 2	3	2	2	1	2	1	1	1	3	2	2	3	2	2
CO 3	3	2	2	1	2	1	1	1	3	2	2	3	2	2
CO 4	3	2	2	1	2	1	1	1	3	2	2	3	2	2
CO 5	3	2	2	1	1	1	1	1	3	2	2	3	2	2

CONCEPTS AND CONVENTIONS (Not for Examination)

L3P0

Importance of graphics in engineering applications, Use of drafting instrument, BIS conventions and specifications - Size, layout and folding of drawing sheets, Lettering and dimensioning.

COMPUTER AIDED DRAFTING (Not for Examination)

L3P0

Page 2 of 5

Importance 2d Drafting, sketching, modifying, transforming and dimensioning.

S. SAM

UNIT I PLANE CURVES (Manual drafting)

L4P2

Curves used in engineering practices Conics – Construction of ellipse – Parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square and circle – Drawing of tangents and normal to the above curves.

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACES L 9 P 3 (CAD Software)

Projection of points – Projection of straight lines located in the first quadrant – Determination of true lengths and true inclinations – Projection of polygonal surface and circular lamina inclined to one reference planes.

UNIT III PROJECTION OF SOLIDS

L9P3

(CAD Software)

Creation of 3D CAD models of pyramids, prisms and solids of revolutions - Sectional views - (Not for Examination)

Projection of simple solids like prisms – pyramids – cylinder and cone when the axis is inclined to one reference plane by change of position method.

UNIT IV SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES L9P3 (CAD Software)

Sectioning of simple solids like prisms – pyramids, cylinder and cone in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other, (Obtaining true shape of section is not required). Development of lateral surfaces of simple and truncated solids – Prisms – pyramids – cylinders and cones.

UNIT V CONVERSION OF ISOMETRIC VIEWS TO ORTHOGRAPHIC VIEWS L 9 P 3 (Manual drafting)

Representation of three dimensional objects – General Principles of Orthographic projection – Need for importance of multiple views and their placement – First angle projection – layout of views – Developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

& Xh

Total Number of hours: 60

Learning Resources

Text Books

- 1. P. Suresh et al., "Engineering Graphics and Drawing", Sonaversity, Sona College of Technology, Salem, Revised edition, 2012.
- 2. K.V. Natarajan Engineering Graphics by, Chennai, 17th edition 2003.

Reference Books

- 1. Dhananjay A. JoIhe, Engineering Drawing with an introduction to AutoCAD, Tata McGraw Hill Publishing Company Limited, 2008.
- 2. Basant Agarwal and Agarwal C.M., Engineering Drawing, Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
- 3. K. R. Gopalakrishnana, Engineering Drawing (Vol. I & II), Subhas Publications, 1998.
- 4. Bertoline & Wiebe fundamentals of graphics communication III edition McGrawhill 2002.

Dr.D.SENTHIL KUMAR, ME.Ph.D PROFESSOR & HEAD DEPT. OF MECHANICAL ENGG. SONA COLLEGE OF TECHNOLOGY JUNCTION MAIN ROAD, SALEM-5.

Department of Mechanical Engineering

Verifiel Page 4 of 5

Sona College of Technology

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	U19PC	CL108	A							ering)			0	0	3	1,
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Quiz	on 1 st half (5)	Internal test II (10)	survey
Intern	nal test I (10)	RTPS (10)	
Mean	of 2 nd half of Experiment (10)	End semester Examination (40)	
List o	of Experiments (Physics part) (A	ny five experiments from the below lis	t)
1	Determination of velocity of u ultrasonic interferometer.	Itrasonic waves and compressibility of	the given liquid using
2	Determination of dispersive pospectrum using a spectrometer.	ower of the prism for various pairs of	colors in the mercury
3	Determination of laser wavelen numerical aperture of an optical	gth, particle size of lycopodium powder fibre using diode laser.	, acceptance angle and
4	Determination of the thickness apparatus.	of a thin wire by forming interference f	ringes using air wedge
5	Determination of the thermal con	nductivity of a bad conductor using Lee's	Disc apparatus.
6	Determination of the Young's m	odulus of the given material by non-unifo	orm bending method.
List o	f Experiments (Chemistry part)		
7	Estimation of hardness of water	sample by EDTA method.	
8	Estimation of alkalinity of water	sample by indicator method.	
9	Estimation of HCl by pH metry.		
10	Estimation of HCl by conductor	netry. (HCl vs NaOH)	
11	Estimation of ferrous ion by pote	entiometric titration.	
12	Evaluate the iron content of the v	water by spectrophotometry.	
		1.5 Credits Total Ho	ours: 30 Hrs

Dr. C. Shanthi
HOD / Sciences
Dr. C. SHANTHI, M.Sc., M.E., Ph.D.,
Professor of Physics
Head, Department of Sciences
Sone College of Technology (Autonomous)

B.E / B.Tech Regulation 2019

COURSE CODE

U19WPL112

LTPC

COURSE NAME

WORKSHOP PRACTICE

0021

Course Outcomes

Upon completion of this course the students will be able to

CO1 Familiarize with the basic of tools and equipment's used in fitting, carpentry, welding and sheet metal.

CO2 Fabricate the different simple products in above trades.

CO3 Produce different joining of metals.

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	(3/2	2/1 in	dicate	s stre	ngth c	of corr	elatio	n) 3-9	Strong	, 2-Me	dium,	1-Weak		
	Prog	ramm	ne Out	come	s (PO:	s) and	Prog	ramm	e Spe	ecific O	utcome	(PSOs)		
COs, POs PSOs Mapping	PO1	PO2	PO3	PO4	PO5	P06	P07	P08	P09	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	2	3	2	1	3	3	2	3	2	3	3	2	2
CO 2	3	2	3	2	1	3	3	2	3	2	3	3	2	2
CO 3	3	2	3	2	1	3	3	2	3	2	3	3	2	2

LIST OF EXPERIMENTS

SECTION 1:

FITTING

Tools and Equipment's- Practice in filling.

Making of Vee joint and square (T-fitting) joint.

SECTION 2:

SHEET METAL

Tools and Equipment's- Practice

Making of Dust Pan and Funnel.

SECTION 3:

WELDING

Tools and Equipment's - Practice

Arc welding of Butt joint and Lap Joint.

SECTION 4:

CARPENTRY

Tools and Equipment's- Planning Practice
Making of Half Lap joint and Dovetail Joint.

Total Number of hours: 30

Dr. D. SENTHIL KUMAR, M.E., Ph.D.

PROFESSOR & HEAD DEPT. OF MECHANICAL ENGG. SONA COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Sona College of Technology

Page 7 of 1

Semester-I	Basic Aptitude – I (Common to All Departments)	L T P C Marks
Course Outcomes	UIACEI	01.
At the end of the course the	he student will be able to:	
1. Solve fundamental probl	ems in specific areas of quantitative aptitude	
2. Solve basic problems in	stated areas of logical reasoning	
3. Demonstrate rudimentar	y verbal aptitude skills in English with regard	d to specific topics
	Solving simple problems with reference	to the following topics:
	a. Numbers – HCF & LCM	
	b. Decimal fractions	
1.Quantitative Aptitude	c. Simplification	
and	d. Square roots & cube roots	
Logical Reasoning	e. Surds & indices	
	f. Ratio and proportion	
	g. Averages	
	h. Area and volume	
	i. Coding and decoding & artificial lang	guage
-49	Demonstrating plain English language s following topics:	kills with reference to the
	a. Synonyms	
2. Verbal Aptitude	b. Antonyms	
a. verbai Aptitude	c. Verbal analogy	
	d. Editing passages	
	e. Sentence filler words	

30 hours.

Dr.S.Anita

Head/Training

Sona College of Technology, Salem-636 005.

Sona College of Technology, Salem - 636 005

(An Autonomous Institution)

Courses of Study for BE / B Tech Semester II under Regulations 2019 (CBCS)

	1	Branch: Civil En	gineer	ing				
S.N	Course Code	Course Title	L	Т	P	С	Category	Total Contact Hours
		The	ory					
1	U19TAM201	தமிழர் மரபு / Heritage of Tamils	1	0	0	1	HSMC	15
2	U19ENG201A	English for Engineers-II	2	0	2	3	HSMC	60 (30L+30P)
3	U19MAT202A	Differential Equations and Vector Calculus	3	1	0	4	BSC	60
4	U19PPR205	Problem Solving Using Python Programming	3	0	0	3	ESC	45
5	U19BEE206	Basics of Electrical and Electronics Engineering	3	0	0	3	ESC	45
6	U19CE201	Basics of Engineering Mechanics	3	1	0	4	ESC	60
		Prac	tical		•			
7	U19BEE207	Basics of Electrical Engineering Laboratory	0	0	2	1	ESC	30
8	U19PCL208A	Physics and Chemistry Laboratory-II	0	0	3	1.5	BSC	45
9	U19PPL211	Python Programming Laboratory	0	0	2	1	ESC	30
10	U19GE201	Basic Aptitude-II	0	0	2	0	EEC	. 30
	4		T	otal Cı	edits	21.5		
	Optional Lang	uage Elective*						
11	U19OLE1201	French						
12	U19OLE1202	German	0	0	2	1	HSMC	30
12	THEORY ELECA	_	J	"	-	1	TISMIC	30

^{*}Students may opt for foreign languages viz., German/French/Japanese with additional one credit (Not accounted for CGPA calculation)

Approved by

13

U190LE1203

Japanese

Afri-	Be elitery	Miralleman	Nonth?
Chairperson, Science and Humanities BoS	Chairperson, Civil Engineering BoS	Member Secretary, Academic Council	Chairperson, Academic Council & Principal
Dr. M. Renuga	Dr. R. Malathy	Dr. R. Shivakumar	Dr. S. R. R. Senthil Kuman

Copy to:-HOD/Civil, Second Semester BE Civil Engineering Students and Staff, COE

UNIT I LANGUAGE AND LITERATURE

1

Language Families in India - Dravidian Languages - Tamil as a Classical Language - Classical Literature in Tamil - Secular Nature of Sangam Literature - Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

UNIT II HERITAGE - ROCK ART PAINTINGS TO MODERN ART - SCULPTURE 3

Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

UNIT III FOLK AND MARTIAL ARTS

3

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT IV THINAI CONCEPT OF TAMILS

3

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India - Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine - Inscriptions & Manuscripts - Print History of Tamil Books.

TOTAL: 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

- 1. தமிழக வரலாறு மக்களும் பண்பாடும் கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
- கணினித் தமிழ் முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
- 3. கீழடி வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- பொருநை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
- 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL (in print)
- Social Life of the Tamils The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
- 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
- 8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
- Keeladi 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
- Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
- Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
- 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) Reference Book.

HOD

Dr. M.RENUGA, Professor & Head,

Department of Humanities & Languages Sona College of Technology, SALEM - 636 005. அலகு l மொழி மற்றும் இலக்கியம்: இந்திய மொழிக் குடும்பங்கள் – திராவிட மொழிகள் – தமிழ் ஒரு செம்மொழி – தமிழ் செவ்விலக்கியங்கள் – சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை – சங்க இலக்கியத்தில் பகிர்தல் அறம் – திருக்குறளில் மேலாண்மைக் கருத்துக்கள் – தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் – பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் – சிற்றிலக்கியங்கள் – தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி – தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

அலகு II மரபு – பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை – சிற்பக் கலை: நடுகல் முதல் நவீன சிற்பங்கள் வரை – ஐம்பொன் சிலைகள்– பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொய்மைகள் – தேர் செய்யும் கலை – சுடுமண் சிற்பங்கள் – நாட்டுப்புறத் தெய்வங்கள் – குமரிமுனையில் திருவள்ளுவர் சிலை – இசைக் கருவிகள் – மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம் – தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.

அலகு III <u>நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்</u>: தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஒயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.

அலகு IV <u>தமிழர்களின் திணைக் கோட்பாடுகள்</u>: தமிழகத்தின் தாவரங்களும், விலங்குகளும் – தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் – தமிழர்கள் போற்றிய அறக்கோட்பாடு – சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் – சங்ககால நகரங்களும் துறை முகங்களும் – சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி – கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.

அலகு V இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு: 3 இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு – இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் – சுயமரியாதை இயக்கம் – இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு – கல்வெட்டுகள், கையெழுத்துப்படிகள் – தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.

TOTAL: 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

- தமிழக வரலாறு மக்களும் பண்பாடும் கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
- 2. கணினித் தமிழ் முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
- 3. கீழடி வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- 4. பொருநை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
- 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL (in print)
- Social Life of the Tamils The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
- 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
- The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
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- Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
- Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
- Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) Reference Book.

HOD

Dr. M.RENUGA, Professor & Head,

Sona College of Technology, SALEM - 636 000.

U19ENG201A - English for Engineers - II

First year II semester

Civil

Course Outcome: At the end of course, the students will be able to

- Frame sentences correctly, both in written and spoken forms of language with accuracy and fluency.
- 2. Develop and demonstrate listening skills for academic and professional purposes.
- 3. Draw conclusions on explicit and implicit oral information.
- Develop effective reading skills and reinforce language skills required for using grammar and building vocabulary.
- Read for gathering and understanding information, following directions and giving responses.

	COURSE OUTCOMES				PF	ROG	RAM	IME (OUTC	OMI	ES			0	
		1	2	3	4	5	6	7	8	9	10	11	12	Ps o1 3 3 3	Ps o2
1	Frame sentences correctly, both in written and spoken forms of language with accuracy and fluency.	2	2	3	2	2	2	3	3	3	3	3	3	3	3
2	Develop and demonstrate listening skills for academic and professional purposes	2	2	1	2	3	2	3	3	3	3	3	3	3	3
3	Draw conclusions on explicit and implicit	3	2	3	2	3	2	3	3	3	3	3	3	3	3
4	Develop effective reading skills and reinforce language skills required for using grammar and building vocabulary	2	2	2	2	2	2	3	3	3	3	3	3	3	3
5	Read for gathering and understanding information, following directions and giving responses.	3	3	3	3	3	3	3	3	3	3	3	3	3	3

UNIT-I

12

- Cause and effect expressions, adjectives, comparative adjectives
- · Listening to conversations, welcome speeches, lectures and description of equipment
- Listening to different kinds of interviews (face-to-face, radio, TV and telephone interviews)
- Understanding notices, messages, timetables, advertisements, graphs, etc.
- Reading passages for specific information transfer

- · Prepositions and dependent prepositions
- · Understanding short conversations or monologues
- · Taking down phone messages, orders, notes etc
- · Listening for gist, identifying topic, context or function
- Reading documents for business and general contexts and interpreting graphical representations

UNIT - III

12

- Collocations
- Listening comprehension, entering information in tabular form
- Error correction, editing mistakes in grammar, vocabulary, spelling, etc.
- Reading passage with multiple choice questions, reading for gist and reading for specific information, skimming for comprehending the general idea and meaning and contents of the whole text

UNIT-IV

12

- Articles, adverbs
- Intensive listening exercises and completing the steps of a process.
- Listening exercises to categorise data in tables.
- Short reading passage: gap-filling exercise related to grammar, testing the understanding
 of prepositions, articles, auxiliary verbs, modal verbs, pronouns, relative pronouns and
 adverbs, short reading passage with multiple choice questions.

UNIT-V

12

- Pronouns
- Listening to extended speech for detail and inference
- Listening and developing hints
- gap-filling exercise testing the knowledge of vocabulary, collocations, dependent prepositions, grammatical structures
- Short reading passages for sentence matching exercises, picking out specific information in a short text

(Theory: 30 hours: Practical: 30 hours) TOTAL: 60 hours

The listening test will be conducted for 20 marks and reading for 20 marks internally and evaluated along with English for Engineers –II in the End Semester Valuation.

Textbook:

Technical English I & II, Dr. M. Renuga et al. Sonaversity, 2016

Extensive Reading

- 1. Who Moved my Cheese? Spencer Johnson-G. P. Putnam's Sons
- 2. Discover the Diamond in You Arindham Chaudhari Vikas Publishing House Pvt. Ltd.

Reference

1. Norman Whitby, Business Benchmark – Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2006.

 A Course in Communication Skills, P. Kiranmai Dutt, Geetha Rajeevan, C. L. N. Prakash, published by Cambridge University Press India Pvt. Ltd.

HOD

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Professor & Head,
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Callege of Technology,
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B. E. / CIVIL ENGINEERING

SEMESTER - II	DIFFERENTIAL EQUATIONS AND	L	T	P	C
U19MAT202A	VECTOR CALCULUS	3	1	0	4

COURSE OUTCOMES

At the end of the course, the students will be able to

- 1. apply the classical methods to solve linear ordinary differential equations.
- 2. apply the appropriate numerical methods to solve ordinary differential equations.
- 3. apply the Laplace transforms technique to solve ordinary differential equations.
- 4. apply the classical method to solve partial differential equations.
- apply the concepts of vector differentiation and integration to determine the line, surface and volume integrals.

		(3/2/1 i	ndicate	s stren			SO Ma tion) 3			dium, 1	-Weak		
00			Progr	ramme	Outco	mes (P	Os) an	d Prog	ramme	e Specif	ic Outco	me (PS	Os)	
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
COI	3	3	2	3	2							2	2	
CO2	3	3	2	3	2					-		2	2	
CO3	3	3	2	3	2					MAN		2	2	
CO4	3	3	2	3	2				-39		100	2	2	
CO5	3	3	2	3	2							2	2	700

UNIT-1 ORDINARY DIFFERENTIAL EQUATIONS

12

Linear higher order ordinary differential equations with constant coefficients - Cauchy's and Legendre's homogeneous linear ordinary differential equations - Method of variation of parameters.

UNIT-II NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL 12 EQUATIONS

Single Step Methods: Taylor's series – Euler and Modified Euler methods – Fourth order Runge – Kutta method for solving first and second order ordinary differential equations.

Multi Step Methods: Milne's and Adam's predictor-corrector methods.

UNIT - III LAPLACE TRANSFORMS

12

Laplace transform: Conditions for existence – Transform of elementary functions – Basic properties – Transform of derivatives and integrals – Transform of unit step function and impulse function – Initial and final value theorems – Transform of periodic functions.

Inverse Laplace transform: Standard results – Statement of convolution theorem and its applications – Solution of linear second order ordinary differential equations with constant coefficients using Laplace transform.

UNIT - IV PARTIAL DIFFERENTIAL EQUATIONS

12

Formation of partial differential equations – Lagrange's linear equation – Solution of standard types of first order partial differential equations – Linear partial differential equations of second and higher order with constant coefficients.

UNIT - V VECTOR CALCULUS

12

Vector differentiation: Scalar and vector valued functions - Gradient, directional derivative, divergence and curl - Scalar potential.

Vector integration: Line, surface and volume integrals – Statements of Green's, Stoke's and Gauss divergence theorem – Simple applications involving squares, rectangles, cubes and rectangular parallelopiped.

Theory: 45 Hours

Tutorial: 15 Hours

Total: 60 Hours

TEXT BOOKS:

- T. Veerarajan, "Linear Algebra and Partial Differential Equations", McGraw Hill Publishers, 1st Edition, 2018.
- T. Veerarajan, "Engineering Mathematics for Semesters I & II", McGraw Hill Publishers, 1st Edition, 2019.

REFERENCE BOOKS:

- 1. J. Stewart, "Calculus", Cengage Publishers, 8th Edition, 2016.
- C. Prasad and R. Garg, "Advanced Engineering Mathematics", Khanna Publishers, 1st Edition, 2018.
- E. Kreyszig., "Advanced Engineering Mathematics", Wiley Publishers, 10th Edition, Reprint, 2017.
- 4. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 44th Edition, 2018.
- B. V. Ramana, "Higher Engineering Mathematics", McGraw Hill Publishers, 29th Reprint, 2017.

S. S. JAYABHARATHI

Head / Department of Mathematics Sona College of Technology Salem – 636 005 Dr. M. RENUGA

BoS - Chairperson Science and Humanities Sona College of Technology

Salem - 636 005

U19PPR205 PROBLEM SOLVING USING PYTHON PROGRAMMING 3 0 0 3

COURSE OUTCOMES

At the end of course, the students will be able to

- 1. Develop algorithmic solutions to simple computational problems
- 2. Write simple Python programs
- 3. Write programs with the various control statements and handling strings in Python
- 4. Develop Python programs using functions and files
- 5. Analyze a problem and use appropriate data structures to solve it.

		(3/2/1 i	ndicate	s stren			SO Ma tion) 3		g, 2-Me	dium, 1	-Weak		
COs	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	3	1	1	2	2	1	3	3	3
CO2	3	3	3	3	3	2	1	1	1	1	1	3	3	3
CO3	3	3	3	3	3	3	2	1	1	1	1	3	3	3
CO4	3	3	3	3	3	2	2	1	1	2	1	3	3	3
CO5	3	3	3	3	3	3	3	1	1	1	1	3	3	3

UNIT I - ALGORITHMIC PROBLEM SOLVING

0

Need for computer languages, Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion).

UNIT II - BASICS OF PYTHON PROGRAMMING

9

Introduction-Python Interpreter-Interactive and script mode -Values and types, variables, operators, expressions, statements, precedence of operators, Multiple assignments, comments, input function, print function, Formatting numbers and strings, implicit/explicit type conversion.

UNIT III - CONTROL STATEMENTS AND STRINGS

9

Conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration-while, for, infinite loop, break, continue, pass, else. Strings-String slices, immutability, string methods and operations.

UNIT IV-

FUNCTIONS AND FILES

9

Functions - Introduction, inbuilt functions, user defined functions, passing parameters - positional arguments, default arguments, keyword arguments, return values, local scope, global scope and recursion. Files -Text files, reading and writing files.

UNIT V - DATA STRUCTURES: LISTS, SETS, TUPLES, DICTIONARIES 9

Lists-creating lists, list operations, list methods, mutability list functions, searching and sorting, Sets-creating sets, set operations. Tuples-Tuple assignment, Operations on Tuples, lists and tuples, Tuple as return value- Dictionaries-operations and methods, Nested Dictionaries.

TOTAL: 45 HOURS

J. QUANU
Dr. J. AKILANDESWARI
PROFESSOR & HEAD
Department of Information Technology
SONA COLLEGE OF TECHNOLOGY
SALEM-636 005

TEXT BOOK

- 1. Reema Thareja, "Problem Solving and Programming with Python", Oxford University Press, 2018.
- 2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/think-python/)

REFERENCES

- 1. Ashok Namdev Kamthane, Amit Ashok Kamthane, "Programming and Problem Solving with Python", Mc-Graw Hill Education, 2018.
- Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python: An Inter-disciplinary Approach", Pearson India Education Services Pvt. Ltd., 2016.
- 3. Timothy A. Budd," Exploring Python", Mc-Graw Hill Education (India) Private Ltd., 2015.
- 4. Kenneth A. Lambert, "Fundamentals of Python: First Programs", CENGAGE Learning, 2012.
- Charles Dierbach, "Introduction to Computer Science using Python: A Computational Problem Solving Focus", Wiley India Edition, 2013.

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U19BEE206 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

L T P C 3 0 0 3

Course Outcomes: At the end of the course, the students will be able to

- 1. analyze the various DC & AC circuits and find the circuit parameters.
- 2. discuss the construction and working principle of DC machines.
- 3. discuss the construction and working principle of Transformer & AC machines.
- 4. describe the various types of measuring techniques.
- 5. discuss the electrical systems in buildings and electrical standards for various devices.

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COs	5 be	Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
COS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10		PO12	PSO1	PSO2		
CO1	2	2	1	2	1	1	1	2	-	-	1	1	5.1743	Add 13		
CO2	2	2	1	1	1	1	1	-			1	1	adi 1	2 1		
CO3	2	2	1	1	1	1	1	-	-	_	1	100	1	1		
CO4	2	2	1	1	1	1	1	-	_	-	1	1	1	1		
CO5	2	2	1	2	1	1	1	2	dia.	andile No.	1	1	1	1		

UNIT I - DC & AC CIRCUITS

0

DC circuits: Definition of voltage, Current, Electromotive force, Resistance, Power & Energy, Ohms law and Kirchhoff's Law & its applications - Series and Parallel circuits- Star-delta transformation.

AC Circuits: Generation of alternating emf - RMS value, Average value, Peak factor and Form factor for sinusoidal AC waveform - Series RLC circuits - Introduction to three-phase system.

UNIT II - DC MACHINES

9

DC Generator: Construction of DC generator – Working principle of DC generator – EMF equation – Types of DC generator- Applications.

DC Motor: Working principle of DC motor - Back EMF- Types of DC motor Applications.

UNIT III - TRANSFORMER & AC MACHINES

Ω

Transformer: Construction and working principle of transformer – EMF equation – Types of transformers- Transformation ratio.

AC machines: Construction and working principle of single phase & three phase induction motor-Applications.

UNIT IV - MEASURING TECHNIQUES

9

Strain measuring techniques using electrical strain gauges- Measurement of Resistance, Inductance and Capacitance using Wheatstone, Anderson and Schering bridgesMeasurement of energy using single phase induction type energy meter –Load cells.

Head of the Department
Department of EEE,
Sona College of Technology.
SALEM-636 005

UNIT V - ELECTRICAL SYSTEMS IN BUILDINGS

9

Protective devices in electrical installations- Earthing for safety- Types of earthing- ISI specifications- Types of wires, wiring systems and selection criteria - Planning electrical wiring for building- Main and distribution boards- Layout of a substation.

TOTAL: 45 Hours

TEXT BOOKS

- 1. B.L. Theraja, "Fundamentals of Electrical Engineering & Electronics", S. Chand & Co Ltd, 2015.
- 2. S. Padma, "Basic Electrical and Electronics Engineering", Sonaversity, Revised edition 2016.

REFERENCES

- 1. S.K. Bhattacharya, "Electrical Machines", Tata MC Graw Hill Publishing company ltd., 3rd Edition, 2009.
- 2. Muthusubramanian R, Salivahanan S, "Basic Electrical and Electronics Engineering", 3rd Edition 2007, Tata McGraw-Hill publishing company limited.
- 3. A.K.Sawheny, "A course in Electrical and Electronics Measurement & Instrumentation DhanpatRai and Co, 9th Edition, 2012

Head of the Department Department of EEE, Sona College of Technology,

SALEM-636 005

U19CE201 - BASICS OF ENGINEERING MECHANICS

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Course Outcomes: At the end of the course, the students will be able to

- 1. Apply the various methods to determine the resultant forces and its equilibrium acting on a particle in 2d
- 2. Apply the concept of reaction forces (non-concurrent coplanar and noncoplanar forces) and moment of various support systems with rigid bodies in 2d equilibrium. reducing the force, moment, and couple to an equivalent force - couple system acting on rigid bodies in 2d.
- 3. Apply the concepts of locating centroids / center of gravity of various sections/ volumes and to find out area moments of inertia for the sections and mass moment of inertia of solids.
- 4. Apply the concepts of frictional forces at the contact surfaces of various engineering systems.
- 5. Apply the various methods of evaluating kinetic and kinematic parameters of the rigid bodies subjected to concurrent coplanar forces.

UNIT 1 - STATICS OF PARTICLES

9+3

Fundamental Concepts and Principles, Systems of Units, Method of Problem Solutions, Statics of Particles -Forces in a Plane, Resultant of Forces, Resolution of a Force into Components, Rectangular Components of a Force, Unit Vectors. Equilibrium of a Particle- Newton's First Law of Motion, Space and Free-Body Diagrams, Forces in Space, Equilibrium of a Particle in Space.

UNIT II - EQUILIBRIUM OF RIGID BODIES

9+3

Principle of Transmissibility, Equivalent Forces, Vector Product of Two Vectors, Moment of a Force about a Point, Varignon's Theorem, Rectangular Components of the Moment of a Force, Scalar Product of Two Vectors, Mixed Triple Product of Three Vectors, Moment of a Force about an Axis, Couple - Moment of a Couple-Further Reduction of a System of Forces, Equilibrium in Two - Reactions at Supports and Connections.

UNIT III - PROPERTIES OF SURFACES AND SOLIDS

Determination of Areas and Volumes - First moment of area and the Centroid of sections - Rectangle, circle, triangle from integration - T section, I section, Hollow section by using standard formula Second and product moments of plane area - Rectangle, triangle, circle from integration - T section, I section by using standard formula - Parallel axis theorem and perpendicular axis theorem - Polar moment of inertia - Principal moments of inertia of plane areas -Principal axes of inertia.

UNIT IV - FRICTION

9+3

Frictional force - Laws of Coulomb friction - Angle of friction - cone of friction - Equilibrium of bodies on inclined plane - Ladder friction.

UNIT V - DYNAMICS OF PARTICLES

Kinematics - Rectilinear Motion and Curvilinear Motion of Particles. Kinetics- Newton's Second Law of Motion -Equations of Motions, Dynamic Equilibrium, Energy and Momentum Methods - Work of a Force, Kinetic Energy of a Particle, Principle of Work and Energy, Principle of Impulse and Momentum, Impact.

TOTAL: 60 Hours

TEXT BOOKS

- 1. Beer Ferdinand P, Russel Johnston Jr., David F Mazurek, Philip J Cornwell, SanjeevSanghi, Vector Mechanics for Engineers: Statics and Dynamics, McGraw Higher Education., 11th Edition, 2017.
- 2. Hibbeler, R.C., "Engineering Mechanics", Vol. 1 Statics, Vol. 2 Dynamics, Pearson Education Asia Pvt. Ltd., (2017).
- 3. Vela Murali, "Engineering Mechanics-Statics and Dynamics", Oxford University Press, 2018.

REFERENCES

- 1. K.L. Kumar, "Engineering Mechanics" Tata McGraw-hill, 2017, 4th Edition
- S.S. Bhavikatti, "Engineering Mechanics", New Age International Publishers, 2006
- 3. R. S. Khurmi, "Engineering Mechanics", S. Chand Publishers, 2018.
- 4. Dr. N. Kotteswaran, "Engineering Mechanics Statics & Dynamics", Sri Balaji Publications 2004.



U19BEE207 BASIC OF ELECTRICAL ENGINEERING LABORATORY

L T P C 0 0 2 1

Course Outcomes: At the end of the course, the students will be able to

- 1. apply basic circuit laws for calculating electric parameters of DC & AC circuits.
- 2. determine and draw the mechanical, electrical and performance characteristics of electrical machines.
- 3. determine the value of Resistance, Inductance and Capacitance using various bridges.

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CO1	2	2	1	2	1	1	1	2	-	-	1	1	1	1
CO2	2	2	1	1	1	1	1	-	-		1	1	1	1
CO3	2	2	1	1	1	1	1	-	-	-	1	1	1	1

List of Experiments

- 1. Verification of Ohm's law.
- 2. Verification of Kirchhoff's laws.
- 3. Measurement of power and power factor for series RLC circuit.
- 4. Load characteristics of DC shunt motor.
- 5. Speed control of DC shunt motor.
- 6. Load test on single phase transformer.
- 7. Speed control of three phase induction motor.
- 8. Measurement of DC resistance by Wheatstone bridge.
- Measurement of inductance using Anderson bridge.
- 10. Measurement of capacitance using Schering bridge.
- 11. Measurement of earth pit resistance using megger

TOTAL: 30 Hours

Dr.S. PADMA, M.E., Ph.D.
Head of the Department
Department of EEE,

Sona College of Technology,

SALEM-636 005

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CO3						_					use hold suggest					ires.
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CO2 CO3 Mean Quiz o	3	alf (5)		1		Dir		2 nd ha	lf (5)	ods				In	e	2

	Determination of rigidity modulus of the material of wire using torsion pendulum.
2	Determination of specific resistance of a given wire using Carey Foster's bridge.
3	Determination of coefficient of viscosity of liquid by Poiseuille's method.
4	Determination of wavelength of prominent colors in mercury spectrum using a spectrometer
5	Determination of the Young's modulus of the given material by uniform bending method.
6	Determination of bandgap of a semiconductor diode.
List o	f Experiments (Chemistry part)
7	Estimation of copper in brass by EDTA method.
8	Estimation of calcium oxide in cement by EDTA method.
9	Determination of dissolved oxygen of water by Winkler's method
9	Determination of dissolved oxygen of water by Winkler's method Estimation of chromium in waste water.
10	Estimation of chromium in waste water.

Dr. C. Shanthi HOD / Sciences

Professor of Physics
Head, Department of Sciences
Gollege of Technology (Autonomous)
SALEM-636 005.

PYTHON PROGRAMMING LABORATORY

COURSE OUTCOMES

U19PPL211

At the end of course, the students will be able to

- 1. Implement the algorithms using basic control structures in Python
- Develop Python programs to use functions, strings and data structures to solve different types of problems
- 3. Implement persistent storing information through file operations

		(3/2/1 i	ndicate	es stren			SO Ma tion) 3		g, 2-Me	dium, 1	-Weak		
			Progr	ramme	Outco	mes (P	Os) an	d Prog	ramme	Specifi	c Outco	me (PS	Os)	
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12	PSO1	PSO2
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CO2	3	3	3	3	2	2		1	2	2	1	2	3	3
CO3	3	3	3	3	2	2		1	2	2	1	3	3	3

LIST OF EXPERIMENTS

- 1. Draw flowchart using any open source software.
- 2. Implement programs with simple language features.
- 3. Implement various branching statements in python.
- 4. Implement various looping statements in python.
- Develop python programs to perform various string operations like concatenation, slicing, indexing.
- 6. Implement user defined functions using python.
- 7. Implement recursion using python.
- 8. Develop python programs to perform operations on list and tuples
- 9. Implement dictionary and set in python
- 10. Implement python program to perform file operations.

TOTAL: 30 HOURS

Dr. J. AKILANDESWARI
PROFESSOR & HEAD
Department of Information Technology
SONA COLLEGE OF TECHNOLOGY
SALEM-636 005

Semester-II	Basic Aptitude – II - U19GE201 L T P C Marks (Common to All Departments) 0 0 2 0 100									
Course Outcomes At the end of the course t	the student will be able to:									
1. Solve more elaborate pr	roblems than those in BA-I* in specific areas	s of quantitative aptitude								
2. Solve problems of grea	ter intricacy than those in BA-I in stated area	is of logical reasoning								
3. Demonstrate higher tha	n BA-I level verbal aptitude skills in English	h with regard to specific topics								
1.Quantitative Aptitude and Logical Reasoning	Solving quantitative aptitude and log reference to the following topics: a. Profit & loss b. Partnership c. Chain rule d. Numbers e. Ages f. Percentages g. Logarithms h. Geometry i. Direction sense j. Symbols and series	ical reasoning problems wit								
2 Verbal Aptitude	Demonstrating verbal aptitude skills in following topics: a. Jumbled sentences b. Reconstructions of sentences (PQRS) c. Sentence fillers two words d. Idioms and phrases e. Spotting errors f. Writing captions for given pictures									

Dr.S.Anita

Head/Training

Dr. S. ANITA

Professor and Head

Department of Training,

SONA COLLEGE OF TECHNOLOGY,

SALEM-636 OCE.

French Language A1 Level 2/A2 First year II semester

Course code: U19OLE1201 0 0 2 1

Course Outcomes: At the end of completion of this course, students will be able to,

- 1. Accept and refuse of an invitation, give some instruction of do's and don'ts, converse in commercial centres, write an invitation
- 2. Describe a city, locate a place in a city, ask further details, describe one's hometown
- 3. Talk about things around us, recite a past event, identify sign boards, express agree and disagree, express obligation and prohibition, sell an object in online
- Talk about one's goals, express one's feelings, write a list of things to do, express an opinion, talk about weather, draft a mail response
- 5. Express one's interest and wish, describe a pet animal, express one's aversions, encourage others, write to ask for a help, narrate a past event, write a biography

Unit-I Gouter à la campagne

6 hours

- Hr 2: City shopping and services, conjugation: payer, manger and acheter, negative sentence
- Hr 4: Imperative sentence, food and beverages, utensils, cutleries, corckeries
- Hr 6: Quantitative articles, quantities, pronoun 'en', express appreciation, write an invitation

Unit-II Voyager dans sa ville

6 hours

- Hr 8: City and localities, Conjugation: prendre, adjectives of place, pronoun 'y'
- Hr 10: Transport, leisure activities, preposition of place, degrees of comparison
- Hr 12: Asking information about a new place, describe a city

Unit-III Faire du neuf avec du vieux

6 hours

- Hr 14: Things in a store, conjugation: faire, imparfait 2, passé composé
- Hr 16: Things in a repairing shop, computer, relative pronouns: que and qui
- Hr 18: Imperative negative, express obligation and interdiction, online sale and response

Unit-IV Changer d'air

6 hours

- Hr 20: Professions, conjugation: croire, voir, recent past tense
- Hr 22: Traveling formalities, expressing about health condition, future tense
- Hr 24: Pronoun COD, talk about weather condition, write about one's plans and projections

Unit-V Devenir éco-citoyen

6 hours

- Hr 26: Citizenship and solidarity, conjugation: connaitre and savoir, depuis vs pendant
- Hr 28: Imparfait vs passé composé, nature and environment, indirect pronouns COI
- Hr 30: Animals, conditional, talk on supporting others, write a biography

Total: 30 hours

Text Books

- 1. The course faculty will provide relevant audios, videos, handouts and notes.
- 2. Books : Saison (Méthode de français, cachier d'activités)
- 3. Reference books: La conjugaison, Dondon, Echo

Dr. M. Renuga

BoS - Chairperson,

Dr. M.RENUGA,

Professor & Head,

HOD / H&L Department of Humanities & Languages.

SALEM - 635 out

German Language Course

First year II semester

Course Code: U19OLE1202	
	LTPC
	0021
Course Outcomes: At the end of the course, students show	uld be able to,
1. Use grammatical expressions appropriately in day-to-	
2. Make them frame simple sentences /questions.	
3. Accentuate to start and sustain basic conversation	
4. Helps them articulate thoughts in German	
Identify the different forms of the verb.	
UNIT – I	6
 Nominative/accusative case, adjectives 	
UNIT – II	6
 Modes of transportation, orientation, giving/understand 	nding simple directions
UNIT – III	6
 Food and beverages, Modal verbs, Separable verbs 	
UNIT – IV	6
 Simple sentences using modal / separable verbs 	
UNIT – V	6
UNII - V	v

Total: 30 hours

Text Book Netzwerk A1

Dr. M. Renuga

Articles of clothing

Dr. M.RENUGA,

Professor & Head,

BoS – Chairperson, Professor & Head, Science & Humanities partment of Humanities & Languages, Science & Humanities & Callege of Technology Sona College of Technology, SALEM - 630 HOD/H&L

Course Code: U19OLE1203 Japanese Language: Level – II First year II semester

0021

Course Outcomes: At the end of completion of this course, students will be able to,

- 1.0 Use verbs in polite conversation or for dissuasion and describe two different activities
- 2.0 Demonstrate the application of causative verbs and those that express ability or possibility, and describe experiences
- 3.0 Use plain-style expressions, those that state opinions, and verbs and adjectives that go with nouns
- 4.0 Express sentences that use 'when' and 'if' and those that describe how services are given and received
- 5.0 Read 126 letters of Kanji, and demonstrate adequate knowledge of the lessons learnt in Levels I and II to pass the Japanese Language Proficiency Test (JLPT) for the N5 Level

6 hours Hr 1-2: Words and verbs expressing requests / Kanji 1-10 Hr 3-4: Asking for permission; making statements to prohibit something / Kanji 11-20 Hr 5-6: Describing two activities / Kanji 21-30 Unit-II 6 hours Hr 7-8: Verbs that express 'I have to ...' / Kanji 31-40 Hr 9-10: Verbs which express ability or possibility / Kanji 41-50 Hr 11-12: Describing experience / Kanji 51-60 Unit-III 6 hours Hr 13-14: Plain-style expressions / Kanji 61-70 Hr 15-16: Expressions like 'I think that ...' / Kanji 71-80 Hr 17-18: Qualifying nouns with verbs and adjectives / Kanji 81-90 **Unit-IV** 6 hours Hr 19-20: Expressions using 'When ...' / Kanji 91-100 Hr 21-22: Describing the giving and receiving of services / Kanji 101-110 Hr 23-24: Expressions using 'If ...' / Kanji 111-126 Unit-V 6 hours Hr 25-26: Preparing for JLPT N5 Hr 27-28: Preparing for JLPT N5 Hr 29-30: Preparing for JLPT N5

Total: 30 hours

Text Books

- 1. The course faculty will provide handouts / notes / course material.
- Books on Basic Japanese language available in the college library.

Dr. M. Renuga BoS – Chairperson,

Dr. M.RENUGA, Professor & Head,

HOD / H&L Denartment of Humanities & Languages, HOD / H&L Denartment of Humanities & Languages, College of Technology, SALEM - 636 005.

111 -CIV

Sona College of Technology, Salem

(An Autonomous Institution)

Courses of Study for B.E. / B.Tech. Semester III Regulations 2019

Branch: Civil Engineering

S. No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Military States	<u> </u>	Theory		the contract of the second second second	Lucios de la composición del composición de la c	para and a state of the state o	
1	U19MAT301A	Fourier Analysis and Statistics	3	1	0	4	60 /
2	U19CE301/	Mechanics of Fluids	2	1	0	3	45
3	U19CE302	Strength of Materials -I	2	1	0	3	45
4	U19CE303	Construction Materials and Practices	3	0	0	3	45
5	U19CE304	Surveying	3	0	0	3	45
6	U19TAM301 /	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	1	0	0	1	15
7	U19GE302	Mandatory Courses: Environment and Climate Science	2	0	0	0	30 /
		Practical		d			
8	U19CE305	Materials Testing Laboratory	0	0	2	1	30
9	U19CE306/	Survey Laboratory	0	0	2	1	30
10	U19ENG301	the last the same of the same		0	2	1	30
11	U19GE301 /	Soft Skills and Aptitude-I	0	0	2	1	30
Andrew Control of the	l Armania San Caranta Ligar			T	otal Credits	21	405

ApprovedBy

Chairperson, Civil Engineering BoS Dr.R.Malathy Member Secretary, Academic Council Dr.R.Shivakumar Chairperson, Academic Council & Principal Dr.S.R.R.Senthil Kumar

Copy to:-

HOD/Civil Engineering, Third Semester BE Civil Students and Staff, COE

B. E. CIVIL ENGINEERING

Sciences of	SEMESTER - III	DAUDIED AND DESCRIPTIONS	L	T	P	C	
	UI9MAT301A	FOURIER ANALYSIS AND STATISTICS	3	1	0	4	

COURSE OUTCOMES

At the end of the course, the students will be able to

- 1: express a periodic signal as an infinite sum of sine and cosine wave components using Fourier series.
- 2 apply the Fourier transform techniques to convert the signal in terms of the frequencies of the waves.
- 3. represent the data in the form of diagram and graph and analyze them.
- apply the concepts of measures of central tendency and dispersion to the given data and analyze the results.
- 5. apply the concepts of correlation and regression to the given data and analyze the result.

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COs	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	POH	PO12	PSO1	PSO2
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CO3	3	3	2	3	2							2	2	
CO4	3	1 3	2	3	2							2	2	
CO5	3	3	2	3	2							2	2	

UNIT-1 FOURIER SERIES

12

General Fourier series - Dirichlet's conditions - Change of intervals - Odd and even functions - Half range sine and cosine series - Root mean square - Parseval's identity - Harmonic analysis.

UNIT - II FOURIER TRANSFORMS

12

Fourier transform pair - Properties - Fourier sine and cosine transforms pair - Properties - Transforms of simple functions - Parseval's identity.

UNIT - III COLLECTION AND REPRESENTATION OF DATA

12

Collection of data – Primary and secondary data – Diagrammatic representation – Simple, subdivided and multiple bar diagrams – Pie diagram – Pictograph – Graphs of frequency distribution – Histogram – Frequency polygon – Frequency curve – Cumulative frequency curve

Sona College of Technology

Department of Mathematics

UNIT - IV MEASURES OF CENTRAL TENDENCY AND DISPERSION

12

Measures of central tendency (Simple arithmetic mean, median and mode) - Quartiles - Measures of dispersion (range, inter-quartile range, quartile deviation, mean deviation, standard deviation and coefficient of variation).

UNIT - V CORRELATION AND REGRESSION

12

Simple and rank correlations - Multiple and partial correlations - Linear regression - Curve fitting (straight line and parabola).

Theory: 45 Hours

Tutorial: 15 Hours

Total: 60 Hours

TEXT BOOKS:

- T. Veerarajan, "Transforms and Partial Differential Equations", McGraw Hill Publishers, 3rd Edition, 2016.
- 2. S. P. Gupta, "Statistical Methods", Sultan Chand and Sons Publishers, 15th Edition, 2012.

REFERENCE BOOKS:

- E. Kreyszig, "Advanced Engineering Mathematics", Wiley Publishers, 10th Edition, Reprint, 2017.
- 2. B. V. Ramana, "Fligher Engineering Mathematics", McGraw Hill Publishers, 29th Reprint, 2017.
- S. C. Gupta and V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons Publishers, 11th Edition, Reprint, 2019.
- R. A. Johnson and C. B. Gupta, "Miller and Freund's, Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2018

APPROVED
Roard of Studies

Civil Eng**v**neering
Chairperson

Prof. S. JAYABHARATHI

معرد

Head / Department of Mathematics Sona College of Technology

Salem - 636 005

Mhm-

Dr. M. RENUGA
BoS – Chairperson
Science and Humanities
Sona College of Technology
Salem – 636 005

20, 05, 2020

B. E. / B. Tech. Regulations 2019

R.JR

COUNT	RSE CODE COURSE NAME L T										P	C		
U19	CE301		GAT THEORY STATE OF THE	1	MECH	ANICS	OF FLU	IDS		h	2	1	0	3
Course	Objectiv	e (s): Tl	ne Purp	ose of le	arning	this cou	rse is to	•						
I.	Measu	re the ba	sic prop	erties of	fluid.		220000000000000000000000000000000000000		MANUFACTA ST					
2.	Unders	stand the	concept	s of stat	ics and	dynamic	s of flui	d flow.	The state of the s	incomponential series in the	gi saminiyayi digan yala	ه ماه میشود از در در از در		
3.	Compu	ite the m	ajor and	minor l	osses oc	curring	in pipe	low.	**********	<u> </u>		*******	-	
4.	Unders	stand the	concept	s of bou	ındary la	ayer prol	blem.			The same of the sa		igulari in 200-letica		4 35 to 12
5.	Physic	Understand the concepts of boundary layer problem. Physical laws in addressing problems in hydraulics.												
Course	Outcome	e (s) (C()s): At t	he end	of this c	ourse, t	he stude	ents wil	l be able	to:				Zen exame
COL	Descri	be the fu	ndamen	tal and p	ohysical	propert	ies of a	fluid (K	2)			415124000		
CO2	Imbibe	basic la	ws and	equation	s used f	or analy	sis of sta	ntic and	dynamic	fluids (I	(2)	Service Maria and American	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	A STATE OF THE PARTY OF THE PAR
CO3			nd veloc							underst	and the ap	pplication	of Equa	tions
CO4	Apply	the Bou	ndary lay	yer conc	ept for c	lifferent	fluid flo	w types	(K3)					
C05	Apply	the simi	litude co	ncept ar	nd set up	the rela	tion bet	ween a	-	nd a proto	type (K4	•)		
Knowle	dge Leve	4: K1 –							model ar					Andre William
Knowle		4: K1 –							model ar					
Knowle CO – PO	dge Leve	4: K1 –				erstand:			model ar				PS	Os
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Knowle CO – PC	dge Leve O Mappi	d: K1 — ng	Rememl	er: K	2 – Unde	erstand:	K3 – . Pos	Apply:	model ar	nalyze:	K5 Ev	aluate:		
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Knowles EO - PO COs CO1	D Mappi PO1 3	l; K1— ng PO2	PO3	er: K PO4	2 – Unde PO5	PO6	Pos PO7 3	PO8	rodel ar K4 – A	PO10	K5 Ev	PO12	PSO1	PO8
Knowles CO - PC COs CO1 CO2	PO1 3 3	PO2 1 2	PO3 3	PO4	PO5 1 2	PO6	Pes PO7 3 3 3	PO8	PO9 1 1	PO10	PO11	PO12 2 2	PSO1 1	2 2
COs CO1 CO2 CO3	PO1 3 3 3	PO2 1 2 2	PO3 3 3 3 3	PO4	PO5 1 2 2	PO6	Pos PO7 3 3 3 3	PO8	PO9 1 1 1	PO10	PO11	PO12 2 2 2 2	PSO1 1 1 1	2 2 2 2
COs CO1 CO2 CO3	PO1 3 3 1	PO2 1 2 2 2 2 2	PO3 3 3 3 3	PO4 1 1 2	PO5 1 2 2 2	PO6 1 1 1 2	Pes PO7 3 3 3 3 3	PO8 1 3	PO9 1 1 2	PO10	PO11	PO12 2 2 2 2 2	PSO1 1 1 1 2	2 2 2 2 2
Knowled CO - PC COs CO1 CO2 CO3 CO4 CO5 CO (Avg)	PO1 3 3 1	PO2 1 2 2 2 3 2 2	PO3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	PO4 1 1 2 2	PO5 1 2 2 1.8	PO6 1 1 1 2 2 2 2	Pes PO7 3 3 3 3 3 3 3 3 3	PO8 1 - 3 1	PO9 1 1 2 2	PO10	PO11	PO12 2 2 2 2 2 2 2	PSO1 1 1 1 2 2	2 2 2 2 2 2 2

Definitions-Fluid and fluid mechanics-Dimensions and units-Fluid properties: Density, specific weight, specific volume, specific gravity, temperature, viscosity, compressibility, vapour pressure, capillarity and surface tension-Continuum concept of system and control volume. Fluid statics: concept of fluid static pressure, absolute, gauge, atmosphere and vacuum pressures - Measurements of pressure. Hydrostatic forces on surfaces -forces on planes - centre of pressure.

UNIT-II FLUID KINEMATICS AND DYNAMICS

9 Hours

Fluid Kinematics: Classification and types of flow - continuity equation (one dimensional differential forms)- velocity field and acceleration- Velocity potential function and stream function-Equipotential line- Flow net. Fluid Dynamics: Equations of motion - Euler's equation of motion-Bernoulli's equation: Applications:- Venturi meter- Orifice meter and Velocity measurement (Pitot tube, Current meter, Hot wire and hot film anemometer, Float technique, Laser Doppler velocimetry)-linear momentum equation and its application to pipe bend.

UNIT - III FLOW THROUGH PIPES AND CHANNEL

9 Hours

Flow through Orifices and Mouth pieces. Reynold's experiment -Laminar flow through circular pipe (Hagen poiseulle's). Flow through pipes -Losses of energy in pipes- Major Energy losses (Darcy - Weisbach's and Chezy's Formula)- Minor Energy losses-Hydraulic gradient and total energy line-Flow through compound: Pipes in series and in parallel-Power transmission through pipes-. Measurement of flow through notches and weir

UNIT-IV BOUNDARY LAYER

9 Hours

Boundary layer - Definition- boundary layer on a flat plate - Laminar and turbulent boundary layer- Displacement, energy and momentum thickness - Momentum integral equation-Boundary layer separation and control - Drag on flat plate.

UNIT-V DIMENSIONAL ANALYSIS AND MODEL STUDIES

9 Hours

Fundamental dimensions - Dimensional homogeneity- Method of dimensional analysis: Rayleigh's method and Buckingham π- theorem-Model analysis-Similitude- Types of similarities-Types of forces acting in moving fluid-

Dimens	sionless numbers-Model Laws-Classification of models: Undistorted and distorted models.
	TOTAL (L:30+T:15): 45 PERIODS
TEXT	BOOKS:
1.	Bansal R.K., "Fluid Mechanics and Hydraulic Machines", Laxmi Publications, New Delhi, 2017.
2.	Rajput R.K., "Fluid Mechanics and Hydraulic Machines", S. Chand Publishing Ltd, New Delhi, 2013.
REFE	RENCES:
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3.	Subramanya K, "Fluid Mechanics and Hydraulic Machines-Problems and Solutions", Tata McGraw Hill Education, New Delhi, 2010.



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1.	Rajput R.K, "Strength of Materials", S.Chand and Co, New Delhi, 2014.
2.	Bansal R.K, "Strength of Materials", Laxmi Publications, New Delhi, 2017.
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1.	Chandramouli P.N, "Fundamentals of Strength of Materials", PHI Learning Private Limited, New Delhi, 2013.
2.	Subramanian R, "Strength of Materials", Oxford University Press, New Delhi, 2010.
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5.	S.S. Rattan "Strength of Materials" McGraw Hill Education (India) Pvt. Ltd., 2nd Edition (Sixth reprint 2013)



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Lintel: Functions of lintel and sunshade-Types of lintel; Arches: Construction-Elements-Classification. Doors and Windows: Technical terms-Types and their suitability. Stair and stair cases:Terminology-Location and classification of stairs-Requirement of good stair. Form works: Centering and shuttering - Scaffoldings, shoring and underpinning - Slip forms.

	TOTAL: 45 Ho
TEXT	BOOKS:
L	Rajput R K., "Engineering Materials", S Chand and Company Ltd, 2014.
2.	Arora S.P and Bindra S.P, "Building Construction", DhanpatRai Publications (P) Ltd, 2015.
REFE	RENCES:
1.	Shetty M.S, "Concrete Technology Theory and Practice", S. Chand and Company Ltd, New Delhi, 2014.
2.	Punmia B.C, "Building Construction", Laxmi Publication, New Delhi, 2016.
3.	Sahn G.C., Joygopal Jena., "Building Materials and Construction", McGraw Hill Education (India) Private Limited, New Delhi, 2015.
4.	William H.Severns and Julian R.Fellows, "Air-conditioning and Refrigeration", John Wiley and Sons, London 1988.
5.	A.F.C. Sherratt, "Air-conditioning and Energy Conservation", The Architectural Press, London, 2007.



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COURS	E CODE	•			- CC	URSE	NAME				L	T	P	·C
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2.	Know t	he basic	s of lev	elling ar	nd theod	olite sur	vey in e	levation	and ang	ular mea	surement	S		
3.	underst	and tack	eometr	ic survey	ying in c	listance :	and heig	ht meas	urement	3				
4.	Know t	he settii	ng out o	fsimple	curves	by linear	and ins	trument	method		man of the same of			
5.	study tl	e total	station s	urveyin	g			2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
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CO4	Describ	e the m	ethods o	of setting	g out cur	ves in th	ne field a	and to de	etermine	the area	and volu	me of str	uctures.(K1)
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CO4	2	2	3	2	2	2	3	3	2	-	-	2	2	2
CO5	2	3	3	2	2	2	3	1	2.	-	-	2	2	2
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Tangential and Stadia Tacheometry surveying-Substense method: Vertical and horizontal measurements. Contour - Contouring - Characteristics of contours - Methods of contouring- Direct method-Indirect method- Contour gradient -Uses of contour plan and map- Measurements of area and volume.

UNIT-IV CURVESAND TRIANGULATION

9 Hours

Curves-Classifications-Elements of curves-Designation of curves-Setting out of simple curves: Linear and instrument method. Triangulation-Classification-Basic systems-Operation-Signals and towers-Satellite station.

UNIT-Y ADVANCED SURVEYING

9 Hours

Total station: Features-Recording-Advantages-Fields procedure. Photogrammetry: Aerial photogrammetry-Application. Remote sensing: Classification-principles- Resolution-Sensors-Methods of remote sensing-Image interpretation-

	fion-Remote sensing in India. Geographic Information Systems: Scope-Purposes- Hardware of GIS-Applications. Positioning Systems: GPS elements- Application and uses- Advantages. Introduction about Drone surveying
	TOTAL: 45 Hours
TEXT	BOOKS:
l.	Punmia B.C, "Surveying, Vol. I and II", Laxmi Publications, 2016.
2.	Basak N.N, "Surveying and Levelling", Tata Mc Graw Hill Publishing Company Ltd., New Delhi, 2014.
3.	Kumar S., "Basics of Remote Sensing and GIS", Laxmi Publication (P) Ltd,2015
REFER	ENCES:
1.	Arora K. R., "Surveying Vol. I and II", Standard Book House, 2015.
2.	Duggal S.K., "Surveying Vol. I and II", Tata McGraw Hill, New Delhi, 2013.
1.	Kanetkar T.P, "Surveying and Levelling Vols. I and II", United Book Corporation, Pune, 2014.



P.JA

COURSE CODE

U19GE302

MANDATORY COURSE:

LTPC

ENVIRONMENT AND CLIMATE SCIENCE

2000

Course Outcomes

COURSE NAME

Upon completion of this course the students will be able to

- CO1 Describe the importance of the acute need for environmental awareness and discuss significant aspects of natural resources like forests, water and food resources.
- CO2 Illustrate the concepts of an ecosystem and provide an overview of biodiversity and its conservation.
- CO3 Analyze the causes, effects of various environmental pollution and their appropriate remedial measures.
- Provide solutions to combat environmental issues like global warming, acid Rain, ozone layer depletion
- CO5 Analyze the effect of climate change in various sectors and their remedial measures.

CO-PO Mapping	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12
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Unit I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES

Definition, Scope and Importance Forest Resources: - Use and over - exploitation, deforestation, Case Studies, Water Resources: - Use and Over-Utilization of Surface and ground water, Floods, Drought, Food Resources- Effects of Modern Agriculture, Fertilizer- Pesticide Problems-Role of an Individual in Conservation of Natural Resources.

Unit II ECOSYSTEMS AND BIODIVERSITY

L6

Structure and Function of an Ecosystem- Energy Flow in the Ecosystem -Food Chains, Food Webs and Ecological Pyramids. Introduction to Biodiversity -Value of Biodiversity: Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Values -India as a Mega-Diversity Nation -- Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts - Endangered and Endemic Species of India - Conservation of Biodiversity: In-Situ and Ex-Situ conservation of Biodiversity.

Unit III ENVIRONMENTAL POLLUTION

L6

Definition – Causes, Effects and Control Measures of:-(A) Air Pollution(B) Water Pollution (C) Soil Pollution (D) Marine Pollution (E) Noise Pollution (F) Thermal Pollution, Solid Waste Management- Effects and Control Measures of Acid Rain, – Role of an Individual in Prevention of Pollution.

Unit IV FUNDAMENTALS OF CLIMATE CHANGE

L 6

Sustainable Development - Climate Change-Causes and effects of Global Warming - Effect of global warming in food supply, plants, sea, coral reef, forest, agriculture, economy- Kyoto Protocol in reduction of greenhouse gases - Ozone Layer Depletion-mechanism, effects and control measuresMontreal Protocol to protect ozone layer depletion -Rain Water Harvesting - Effect of climate change due to air pollutionCase study - CNG vehicles in Delhi.

Unit V EFFECT OF CLIMATE CHANGE

L6

Fungal diseases in forests and agricultural crops due to climatic fluctuations - Growing energy needs - effect of climate change due to non-renewable energy resources. Renewable energy resources in the prevention of climatic changes- Effect of climatic changes in ground water table, garments, monuments, buildings, consumption of energy, agriculture and in electric power sector - Carbon credit - carbon footprint - disaster management - Role of an individual to reduce climate change.

Total Number of hours: 30

Text Book:

- Miller, T.G. Jr., "Environmental Science", Wadsworth Pub. Co. 2018 2. Anubha Kaushik and Kaushik,
- "Environmental Science and Engineering" New Age International Publication, 4thMulticolour Edition, New Delhi, 2014.

Reference Books:

- S. Radjarejesri et al., "Environmental Science" Sonaversity, Sona College of Technology, Salem, 2018.
- Masters, G.M., "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., 2nd Edition, 2004.
- 3. Erach, B., "The Biodiversity of India", Mapin Publishing P.Ltd., Ahmedabad, India.
- 4. ErachBharucha, "Textbook of Environmental Studies for Undergraduate Courses", 2005, University Grands Commission, Universities Press India Private Limited, Hyderguda, Hyderabad 500029.

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2.	Acquai	nt with t	he expe	rimenta	method	s to dete	ermine tl	he mech	anical p	roperties	of materi	als.	N 807 U	
3.	7	121								avements	the state of the state of the state of			
Course	Outcome	(s) (CC	s): At t	he end	of this c	ourse, t	he stude	ents will	be able	to:				
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CO3	Apply	the techr	nical cor	cepts a	nd ways	to solve	enginee	ring pro	blems th	rough co	nducting	experim	ents. (K3	3)
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COURSE CONTENT

Brick/Building blocks: Shape and Size-Efflorescence-Compressive strength-Water absorption-Field test.

Wood: Compressive strength.

Cement: Specific gravity test-Fineness -Consistency test- Setting time- Soundness -Compressive strength of cement mortar cubes- Field test.

Fine aggregate: Specific gravity test-Bulking of sand-Sieve Analysis-Fineness modulus.

Coarse aggregate: Specific gravity test-Crushing strength-Impact strength-Shape test-Water absorption- Sieve Analysis-Fineness modulus.

Steel: Stress-strain characteristics - Modulus of elasticity -Hardness -Impact strength-Shear strength.

Evaluation of Stiffness on helical spring.

Stiffness and modulus of rigidity of the specimen using torsion testing machine.

Deflection test on cantilever and simply supported beam.

	TOTAL: 30 Hours
REFER	RENCES:
1.	M. S. Shetty, "Concrete Technology - Theory and Practice", S. Chand Publications, 2006
2.	IS 4031 (Part 1) – 1996 – Indian Standard Method for determination of fineness by dry sieving.
3.	IS 2386 (Part 1 to Part 6) - 1963 - Indian Standard methods for test for aggregate for concrete
4.	IS 383-1970 Indian Standard specification for coarse and fine aggregates from natural sources for concrete.
5-	IS 456-2000 Code of Practice is an Indian Standard code for Plain and Reinforced Concrete





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2.	To train	the stu	dents in	all the r	elated c	alculatio	ns and i	n the pro	eparation	n of the re	equired n	naps.	2 1 5	
3.	To imp	art inter	sive tra	ining in	the use	of surve	ying inst	ruments						
4,	To train	the stu	dents to	appreci	ate pract	ical diff	iculties	in surve	ying on	the field.				
5.	Provid	ng an oj	portuni	ty to the	student	s to dev	elop tear	n spirit.						1.1
Course	Outcome	(s) (CC)s): At 1	he end	of this c	ourse, t	he stude	ents will	be able	to:				
CO1	Use con	vention	al surve	ying too	ols such	as chain ıral plot	/tape, co	mpass,	dumpy l y profili	evel, theo	dolite in	the field	of civil	
€02	Use mo	dern su	rveying	instrum	ents like	total sta	tion and	GPS.	PIOIII					
CO3	Apply	he techi	nical cor	cepts ar	nd ways	to solve	enginee	ring pro	blems b	y conduc	ting expe	riments.		
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CO2	3	3	103	2		2		2	3	3	-	2		2

COURSE CONTENT S

Chain Survey

1. Study of chains and its accessories, Aligning, Ranging, Chaining and Marking Perpendicular offset

Compass Survey

2. Compass Traversing - Measuring Bearings & arriving included angles

Levelling - Study of levels and levelling staff

3. Reduction of levels (Check and Fly leveling) - Height of collimation and Rise and Fall method.

Theodolite - Study of Theodolite

- 4. Measurements of horizontal angles by reiteration and repetition and vertical angles
- 5. Determination of elevation of an object using single plane method when base is accessible/inaccessible

Tacheometry - Tangential system - Stadia system

6. Measurement of height and distance using stadia and tangential system of tachometry.

Curve Setting

7. Setting out of a simple curve using linear method.

Total Station - Study of Total Station, Measuring Horizontal and vertical angles

- 8. Measurement of angles and height
- 9. Traverse using Total station and Area of Traverse
- 10. Determination of distance and difference in elevation between two inaccessible points using Total station

Global Positioning Systems

11. Calculation of latitude and longitude using GPS.

Drones

12. Advance surveying using Drones

Setting out works

Centre line marking for single Room and Double Room

TOTAL: 30

REFERENCES:

Arora K. R, "Surveying Vol. I and II", Standard Book House, 2015.

2.	Duggal S.K, "Surveying Vol. I and II", Tata McGraw Hill, New Delhi, 2013.
3.	Kanetkar T.P, "Surveying and Levelling Vols. I and II", United Book Corporation, Pune, 2014.





U19ENG301- Communication Skills Laboratory (Lab/Practical Course)

0021

(Common to all branches of Third / Fourth Semester B.E / B.Techprogrammes)

Course Outcome: At the end of the course, the students will be able to

- Communicate confidently and effectively
- Demonstrate active listening skills
- Practice soft skills and interpersonal skills to excel in their jobs.
- Use language efficiently to face interviews, participate in group discussions and present speeches.
- 1. Listening Comprehension: Listening and typing listening and sequencing of sentences Filling in the blanks Listening and answering questions.
- 2. Reading Comprehension: Filling in the blanks Cloze exercises Vocabulary building Reading and answering questions.
- Speaking: Phonetics: Intonation Ear training Correct Pronunciation Sound recognition exercises Common errors in English.

Conversations: Face to Face Conversation - Telephone conversation - Role play activities (Students take on roles and engage in conversation)

- 4. Making presentations: introducing oneself introducing a topic answering questions individual presentation practice
- 5. Creating effective PPTs presenting the visuals effectively
- 6. Using appropriate body language in professional contexts gestures, facial expressions, etc.
- 7. Preparing job applications writing covering letter and résumé
- 8. Applying for jobs online email etiquette
- 9. Participating in group discussions understanding group dynamics brainstorming the topic mock GD
- 10. Training in soft skills persuasive skills people skills questioning and clarifying skills
- 11. Writing Project proposals: collecting, analyzing and interpreting data / drafting the final report
- 12. Attending job interviews answering questions confidently
- 13. Interview etiquette dress code body language mock interview

TOTAL: 30 PERIODS

REFERENCE BOOKS:

- 1. English and Soft Skills, Dhanavel, S.P. Hyderabad: Orient BlackSwan Ltd. 2010.
- How to Prepare for Group Discussion and Interview, Corneilssen, Joep. New Delhi: Tata-McGraw-Hill, 2009.
- 3. Group Discussion and Team Building D'Abreo, Desmond A. Mumbai: Better yourself books, 2004.
- 4. The ACE of Soft Skills, Ramesh, Gopalswamy, and MahadevanRamesh.New Delhi: Pearson, 2010.
- 5. Corporate Soft Skills, Gulati, Sarvesh. New Delhi: Rupa and Co. 2006.
- Presentation Skills for Students, Van Emden, Joan, and Lucinda Becker. New York: Palgrave Macmillan, 2004.
- 7. Dictionary of Common Errors, Turton, N.D and Heaton, J.B. Addision Wesley Longman Ltd., Indian reprint 1998.

EXTENSIVE READING

- 1. The 7 Habits of Highly Effective People, Covey, Stephen R. New York: Free Press, 1989.
- 2. The Professional, Bagchi, Subroto.New Delhi: Penguin Books India, 2009.

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Semester-III	U19 GE301- SOFT SKILLS AND APTITUDE -I L T P C Marks
Course Outcomes At the end of the co	urse the student will be able to:
	abilities in specific soft-skill areas using hands-on and/or case-study approaches
	of greater intricacy in stated areas of quantitative aptitude and logical reasoning
	her levels of verbal aptitude skills in English with regard to specific topics
1.Soft Skills	Demonstrating soft-skill capabilities with reference to the following topics: a. Attitude building b. Dealing with criticism c. Innovation and creativity d. Problem solving and decision making e. Public speaking f. Group discussions
	Solving problems with reference to the following topics:
2. Quantitative Aptitude and Logical Reasoning	 a. Vedic Maths: Fast arithmetic, multiplications technique, Criss cross, Base technique, Square root, Cube root, Surds, Indices, Simplification. b. Numbers: Types, Power cycle, Divisibility, Prime factors & multiples, HCF & LCM, Remainder theorem, Unit digit, highest power. c. Averages: Basics of averages and weighted average. d. Percentages: Basics of percentage and Successive percentages. e. Ratio and proportion: Basics of R &P, Alligations, Mixture and Partnership. f. Profit, Loss and Discount: Basic & Advanced PLD g. Data Interpretation: Tables, Bar diagram, Venn diagram, Line graphs, Pie charts, Caselets, Mixed varieties, Network diagram and other forms of data interpretation: h. Syllogism: Six set syllogism using Venn diagram and tick and cross method Demonstrating English language skills with reference to the following topics:
3. Verbal Aptitude	a. Verbal analogy b. Tenses c. Prepositions d. Reading comprehension e. Choosing correct / incorrect sentences f. Describing pictures g. Error spotting

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Department of Placement Training Sona College of Technology. Salem-636 005.

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அலகு l <u>நெசவு மற்றும் பானைத் தொழில்நுட்பம்:</u> சங்க காலத்தில் நெசவுத் தொழில் – பானைத் தொழில்நுட்பம் – கருப்பு சிவப்பு பாண்டங்கள் – பாண்டங்களில் கீறல் குறியீடுகள்.

அலகு II <u>வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்:</u>
சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு – சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் – சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் – மாமல்லபுரச் சிற்பங்களும், கோவில்களும் – சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் – நாயக்கர் காலக் கோயில்கள் – மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் – செட்டிநாட்டு வீடுகள் – பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ – சாரோசெனிக் கட்டிடக் கலை.

அலகு III <u>உற்பத்தித் தொழில் நுட்பம்:</u>
கப்பல் கட்டும் கலை – உலோகவியல் – இரும்புத் தொழிற்சாலை – இரும்பை உருக்குதல், எஃகு – வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் – நாணயங்கள் அச்சடித்தல் – மணி உருவாக்கும் தொழிற்சாலைகள் – கல்மணிகள், கண்ணாடி மணிகள் – சுடுமண் மணிகள் – சங்கு மணிகள் – எலும்புத்துண்டுகள் – தொல்லியல் சான்றுகள் – சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.

அலகு IV <u>வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்:</u> அணை, ஏரி, குளங்கள், மதகு – சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம் – கால்நடை பராமரிப்பு – கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் – கடல்சார் அறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குளித்தல் – பெருங்கடல் குறித்த பண்டைய அறிவு – அறிவுசார் சமூகம்.

அலகு V <u>அறிவியல் தமிழ் மற்றும் கணித்தமிழ்</u>: அறிவியல் தமிழின் வளர்ச்சி –கணித்தமிழ் வளர்ச்சி – தமிழ் நூல்களை மின்பதிப்பு செய்தல் – தமிழ் மென்பொருட்கள் உருவாக்கம் – தமிழ் இணையக் கல்விக்கழகம் – தமிழ் மின் நூலகம் – இணையத்தில் தமிழ் அகராதிகள் – சொற்குவைத் திட்டம்.

TOTAL: 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

- 1. தமிழக வரலாறு மக்களும் பண்பாடும் கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
- 2. கணினித் தமிழ் முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
- 3. கீழடி வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- 4. பொருநை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
- 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL (in print)
- 6. Social Life of the Tamils The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
- 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
- 8. The Contributions of the Tamils to Indian Culture (Dr.M. Valarmathi) (Published by: International Institute of Tamil Studies.)
- 9. Keeladi 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, TamilNadu)
- 10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
- 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
- 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) Reference Book.

M. J. 19/22

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SALEM - 639

UNIT I WEAVING AND CERAMIC TECHNOLOGY

Weaving Industry during Sangam Age - Ceramic technology - Black and Red Ware Potteries (BRW) - Graffiti on Potteries.

UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY

3

Designing and Structural construction House & Designs in household materials during Sangam Age -Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.

UNIT III MANUFACTURING TECHNOLOGY

3

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold- Coins as source of history - Minting of Coins - Beads making-industries Stone beads -Glass beads - Terracotta beads - Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.

UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY

3

Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries - Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

UNIT V SCIENTIFIC TAMIL & TAMIL COMPUTING

3

Development of Scientific Tamil - Tamil computing - Digitalization of Tamil Books - Development of Tamil Software - Tamil Virtual Academy - Tamil Digital Library - Online Tamil Dictionaries - Sorkuvai Project.

TOTAL: 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

- 1. தமிழக வரலாறு மக்களும் பண்பாடும் கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
- 2. கணினித் தமிழ் முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
- 3. கீழடி வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- 4. பொருநை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
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- 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)

12. Journey of Civilization Indus to Vaigai (R.Ramakrishna) (Published by: RMRL) - Reference Book.

HOD 19723

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COURSE CODE

U19GE第02

LTPC

COURSE NAME

MANDATORY COURSE:

ENVIRONMENT AND CLIMATE SCIENCE

2000

Course outcome:

Upon completion of this course the students will be able to

- CO1 Describe the importance of the acute need for environmental awareness and discuss significant aspects of natural resources like forests, water and food resources.
- **CO2** Illustrate the concepts of an ecosystem and provide an overview of biodiversity and its conservation.
- **CO3** Analyze the causes, effects of various environmental pollution and their appropriate remedial measures.
- Provide solutions to combat environmental issues like global warming, acid Rain, ozone layer depletion.
- CO5 Analyze the effect of climate change in various sectors and their remedial measures.

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CO - 2	2												-
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CO - 4	3	2				2	2						2
CO - 5	3	2				2	2						2

Unit I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES L 6

Definition, Scope and Importance Forest Resources: - Use and over - exploitation, deforestation, Case Studies, Water Resources: - Use and Over-Utilization of Surface and ground water, Floods, Drought, Food Resources- Effects of Modern Agriculture, Fertilizer- Pesticide Problems-Role of an Individual in Conservation of Natural Resources.

Unit II ECOSYSTEMS AND BIODIVERSITY

L6

Structure and Function of an Ecosystem– Energy Flow in the Ecosystem -Food Chains, Food Webs and Ecological Pyramids. Introduction to Biodiversity –Value of Biodiversity: Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Values –India as a Mega-Diversity Nation – Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts – Endangered and Endemic Species of India – Conservation of Biodiversity: In-Situ and Ex-Situ conservation of Biodiversity.

Unit III ENVIRONMENTAL POLLUTION

L 6

Definition – Causes, Effects and Control Measures of:-(A) Air Pollution(B) Water Pollution (C) Soil Pollution (D) Marine Pollution (E) Noise Pollution (F) Thermal Pollution, Solid Waste Management-Effects and Control Measures of Acid Rain, – Role of an Individual in Prevention of Pollution.

Unit IV FUNDAMENTALS OF CLIMATE CHANGE

L 6

Sustainable Development- - Climate Change-Causes and effects of Global Warming - Effect of global warming in food supply, plants, sea, coral reef, forest, agriculture, economy- Kyoto Protocol in reduction of greenhouse gases - Ozone Layer Depletion-mechanism, effects and control measures Montreal Protocol to protect ozone layer depletion -Rain Water Harvesting - .Effect of climate change due to air pollution Case study - CNG vehicles in Delhi.

Unit V EFFECT OF CLIMATE CHANGE

L 6

Fungal diseases in forests and agricultural crops due to climatic fluctuations - Growing energy needs - effect of climate change due to non-renewable energy resources. Renewable energy resources in the prevention of climatic changes- Effect of climatic changes in ground water table, garments, monuments, buildings, consumption of energy, agriculture and in electric power sector - Carbon credit - carbon footprint - disaster management -Role of an individual to reduce climate change.

Total Number of hours: 30

Learning Resources

Text Book:

- Miller, T.G. Jr., "Environmental Science", Wadsworth Pub. Co. 2018 2. Anubha Kaushik and Kaushik,
- "Environmental Science and Engineering" New Age International Publication, 4thMulticolour Edition, New Delhi, 2014.

Reference Books:

- S. Radjarejesri et al., "Environmental Science" Sonaversity, Sona College of Technology, Salem, 2018.
- 2. Masters, G.M., "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., 2nd Edition, 2004.
- 3. Erach, B., "The Biodiversity of India", Mapin Publishing P.Ltd., Ahmedabad, India.
- ErachBharucha, "Textbook of Environmental Studies for Undergraduate Courses", 2005,
 University Grands Commission, Universities Press India Private Limited, Hyderguda, Hyderabad 500029.

Dr. M. Raia

Course Coordinator / Sciences

Dr. C. Shanthi

HOD / Sciences

Dr. M. RenugaChairperson BOS,
Science and Humanities

(Common to all branches of Third / Fourth Semester B.E / B.Tech-programmes)

Course Outcome: At the end of the course, the students will be able to

- Communicate confidently and effectively
- Demonstrate active listening skills
- Practice soft skills and interpersonal skills to excel in their jobs.
- Use language efficiently to face interviews, participate in group discussions and present speeches.
- 1. **Listening Comprehension**: Listening and typing listening and sequencing of sentences Filling in the blanks Listening and answering questions.
- 2. **Reading Comprehension**: Filling in the blanks Cloze exercises Vocabulary building Reading and answering questions.
- 3. Speaking: Phonetics: Intonation Ear training Correct Pronunciation Sound recognition exercises Common errors in English.

Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

- 4. Making presentations: introducing oneself introducing a topic answering questions individual presentation practice
- 5. Creating effective PPTs presenting the visuals effectively
- 6. Using appropriate body language in professional contexts gestures, facial expressions, etc.
- 7. Preparing job applications writing covering letter and résumé
- 8. Applying for jobs online email etiquette
- 9. Participating in group discussions understanding group dynamics brainstorming the topic mock GD
- 10. Training in soft skills persuasive skills people skills questioning and clarifying skills
- 11. Writing Project proposals: collecting, analyzing and interpreting data / drafting the final report
- 12. Attending job interviews answering questions confidently
- 13. Interview etiquette dress code body language mock interview

TOTAL: 30 PERIODS

REFERENCE BOOKS:

- 1. English and Soft Skills, Dhanavel, S.P. Hyderabad: Orient BlackSwan Ltd. 2010.
- 2. How to Prepare for Group Discussion and Interview, Corneilssen, Joep. New Delhi: Tata-McGraw-Hill, 2009.
- 3. Group Discussion and Team Building D'Abreo, Desmond A. Mumbai: Better yourself books, 2004.
- 4. The ACE of Soft Skills, Ramesh, Gopalswamy, and MahadevanRamesh. New Delhi: Pearson, 2010.
- 5. Corporate Soft Skills, Gulati, Sarvesh. New Delhi: Rupa and Co. 2006.
- 6. Presentation Skills for Students, Van Emden, Joan, and Lucinda Becker. New York: Palgrave Macmillan, 2004.
- Dictionary of Common Errors, Turton, N.D and Heaton, J.B. Addision Wesley Longman Ltd., Indian reprint 1998.

EXTENSIVE READING

- 1. The 7 Habits of Highly Effective People, Covey, Stephen R. New York: Free Press, 1989.
- 2. The Professional, Bagchi, Subroto New Delhi: Penguin Books India, 2009.

MAN

Dr. M.RENUGA,
Professor & Head,
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Sona College of Technology,
SALEM - 6

Semester-III	U19GE301-SOFT SKILLS AND APTITUDE – I	L 0	T 0	P 2		Marks 100			
Course Outcomes At the end of the co	urse the student will be able to:								
1. Demonstrate cap	abilities in specific soft-skill areas using hands-on and/or	case-	stud	y ap	proa	aches			
	of greater intricacy in stated areas of quantitative aptitude								
Demonstrate goo errors and utilize	d vocabulary skills, analyse comprehension and critical r language skills to describe pictures effectively.	easo	ning	pa	issa	ges, spo			
	Demonstrating soft-skill capabilities with reference to the following topics:								
	a. Attitude building								
	b. Dealing with criticism								
1.Soft Skills	c. Innovation and creativity								
	d. Problem solving and decision making								
	e. Public speaking								
	f. Group discussions								
	Solving problems with reference to the following topics:								
2. Quantitative Aptitude and Logical Reasoning	 a. Vedic Maths: Fast arithmetic, multiplications technique, Criss cross, Base technique, Square root, Cube root, Surds, Indices, Simplification. b. Numbers: Types, Power cycle, Divisibility, Prime factors & multiples, HC & LCM, Remainder theorem, Unit digit, Tens digit, highest power. c. Averages: Basics of averages and weighted average. d. Percentages: Basics of percentage and Successive percentages. e. Ratio and proportion: Basics of R &P, Alligations, Mixture and Partnership. f. Profit ,Loss and Discount: Basic & Advanced PLD g. Data Interpretation: Tables, Bar diagram, Venn diagram, Line graphs, Picharts, Case lets, Mixed varieties, Network diagram and other forms of dat interpretation. h. Syllogism: Six set syllogism using Venn diagram and tick and cross method 								
3. Verbal Aptitude	Demonstrating English language skills with reference to the following to a. Verbal analogy b. Tenses c. Prepositions d. Reading comprehension e. Choosing correct / incorrect sentences f. Describing pictures g. Error spotting								

Dr.S.Anita
Head/Training

Dr. S. ANITA

Professor and Head

Department of Training,

SONA COLLEGE OF TECHNOLOGY,

SALEM-636 005.

Sona College of Technology, Salem (An Autonomous Institution) Courses of Study for B.E. / B.Tech.Semester IV under Regulations 2019



Branch: Civil Engineering

S, No	Course Code	Course Title	Lecture	Tutorial	Practical	Credit	Total Contact Hours
Service Stock		Theory		<u> </u>	4		
1	U19CE401	Environmental Engineering	3	0	0	3	45
2	U19CE402 /	Strength of Materials-II	2	1	0	3	45 /
3	U19CE403	Transportation Engineering	3	0	0	3	45
4	U19CE404 /	Concrete Technology	3	0	0	3	45
	U19CE903 /	Professional Elective - Elements of Building Planning	Jan Adamson Commission (Commission Commission Commissio			7 75	***********
•	U19CE904	Professional Elective - Energy Efficiency and Green Building	3	0	0	3	45
6	U19GE403 /	Mandatory Courses - Essence of Indian Traditional Knowledge	2	0	0	0	30 /
		Practical					THE SECTION
7 /	U19CE405 /	Fluid Mechanics Laboratory	0	0	2	1	30
8	U19CE406	Concrete and Highway Laboratory	0	Ó	2	1	30 /
9	U19CE407 /	Environmental Engineering Laboratory	0	0	2	1	30
10	U19GE401	Soft Skills and Aptitude-II	0	0	2	1	30 /
270				**************************************	Total Credits	19/	375

ApprovedBy

Chairperson, Civil Engineering BoS Dr.R.Malathy

Dr.R.Shivakumar

Member Secretary, Academic Council 9.1.24

Chairperson, Academic Council & Principal Dr.S.R.R.Senthil Kumar

Copy to:-

HOD / Civil Engineering, Fourth Semester BE Civil Students and Staff, CO

Sona College of Technology, Salem -5

REGULATION 2019 / FOURTH SEMESTER

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CO3	3	3	2	2	- 1	2	2	2		-	-	-	2	1
CO4	3	3	2	1	1	1	2 .	2	-	-	-	-	1	1
CO5	3	3	2	2	1	2	1	2	-	-	-	-	2	2
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2.	Punmia, B.C., Ashok Jain, and Arun Jain, "Water Supply Engineering", Laxmi Publications (P) Ltd., New Delhi, 2010.
3.	Birdie G.S, Birdie J.S, "Water Supply & Sanitary Engineering", Dhanpat Rai Publishing Company (P) Ltd. New Delhi, 2013.
4.	Duggal K.N., "Elements of Environmental Engineering" S.Chand and Co. Ltd., New Delhi, 2014.
REFE	RENCES:
1.	Manual on Water Supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2013.
2.	Syed R. Qasim and Edward M. Motley Guang Zhu, Water Works Engineering Planning, Design and Operation, Prentice Hall of India Learning Private Limited, New Delhi, 2009.
3.	Metcalf and Eddy- Wastewater Engineering-Treatment and Reuse, Tata Mc. Graw-Hill Company, New Delhi, 2010.

Pr.R.MALATHY
Head Of The Department.
Dean (R&D) of Civil Engg.
Sona College of Technology,
SALEM-636 005.

	E COD	E			CO	OURSE	NAME				L	T	P	C
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Course C	bjective	e (s): Tl	he Purp	ose of le	arning	this cou	rse is to	:						
1.	Determi	ne the	deflectio	n of the	beam ba	ased on	the vario	ous meth						
2.	Analysi	s of the	truss co	mponen	ts using	the met	hod of jo	oints, sec	ction, an	d tension	coefficie	ent.		
	Apply k													
	Calcula								cylinde	r				
	Determi													
Course C	Outcome	(s) (C0	Os): At	the end	of this c	course, t	he stud	ents wil	l be able	e to:				1
CO1	Establis	h the sl	ope and	deflection	on in bea	ams by t	ising vai	rious me	ethods. (K2)				
CO2	Determi													
CO3	Familia	rize the	behavio	or of colu	ımns un	der axia	l and eco	centric le	oads.(K	3)			<u> </u>	
CU4	of failur	es.(K4))							uid pressi		* .		
COS	curved l	eams.(K5)							ate the sh			d the stre	esses in
Knowled	lge Leve	1: K1 – 1	Rememb	per: K2	2 – Unde	erstand:	K3 – Ap	pply: K	(4 – Ana	alyze: K5	– Evalua	ite:		
CO – PO	Mappi Mappi	ng		' X			-							
							Pos						PS	SOs
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO
601		2	2	1	1	1	0	0	0	0	2	2	. 3	3
CO1	3	3	2		1	1	0	0	0	0	2	3	2	2
CO2	3	3	3	3	1	1	0	0	0	0	2	3	. 3	2
CO3	.2	3	3		1	1	0	0	0	0	2	2	2	2
CO4	2	3	2	2	1	1	0	0	0	0	2	2	1	1
CO5	2	3	2	2	1	1	0	U		0				
CO (Avg)	2.4	2.8	2.4	1.8	1	1	0	0	0	0	2	2.4	2.2	2
	elation I	Level:		1:Sligh	it (Low)			2:Mode	rate (Me	edium)		3:Sub	stantial (High)
Course table to the	-													
			DEFLE	CTION	OF DE	TERMI	NATE	BEAMS	S				6+3 =	9 Hour
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Elastic		Governi	ng diffe					of deter	minant	beams.				
Elastic o conjuga	curve – C ite beam IT-II	Governi method	ng differ for con	iputation	r of slop	e and de	eflection		or de				6+3 =	9 Hour
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TII	RSE COI	DE			C	OURSI	E NAMI	E			L	T	P	C
UI	9CE403			TRA	NSPOR	TATIO	N ENG	INEER	ING		3	0	0	3
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1.									cross-sec	ctional ele	ements ir	the high	way.	
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	Outcome								l be able	e to:				
CO1										nents. (K	1)			
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CO1	3	3	3	2	3	1	1	1	3	3	3	3	3	3
CO2	3	3	3	2	2	2	1	1	3	2	3	2 .	3	2
CO3	-	-	3	-	-	-		-	2	-	-	- 7	3	2
CO4	3	1	1	1	1	1	1	2	2	1	2	2	3	2
CO5	3	3	3	2	3	1	1	1	3	1	1	2	3	2
CO						- V					225	2.25		2.2
(Avg)	3	2.5	2.6	1.75	2.25	1.25	1	1.25	2.6	1.75	2.25	2.25	3	2.2
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CO3	3	2	3	2	2	2	3	1	2	1	_	2		2
CO4	3	2	2	2	2	2	3	1	2	1		2	_	2
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1.	Shetty, M.S., "Concrete Technology", Theory & Practice, S.Chand and Co, 2019.
2.	Bhavikatti S S, "Concrete Technology", I.K. International Publishing House Pvt. Limited, 2015.
3.	Gupta.B.L., Amit Gupta, Concrete Technology, Jain Book Agency, 2010.
REFER	ENCES:
1.	Shetty, M.S., "Concrete Technology", Theory & Practice, S.Chand and Co, 2019.
2.	Bhavikatti S S, "Concrete Technology", I.K. International Publishing House Pvt. Limited, 2015.
3.	Gupta.B.L., Amit Gupta, Concrete Technology, Jain Book Agency, 2010.
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COUR	SE COL)E			C	OURSE	ENAMI				L	T	P	C
U19	CE405				Fluid N	Aechani	ics Labo	oratory	/		0	0	2	1
Course	Objectiv	ve (s): T	he Purp	oose of I	earning	this co	urse is t	0:						
1.	To pro	vide pra	ctical ki	nowledge	e in the	verificat	ion of p	rinciples	of fluid	flow.				
2.	To gair	knowle	edge in	performa	ance test	ing of H	lydraulio	e Turbin	es and H	Iydraulic	Pumps.			
3.										fluid flov	N.			6
Course	Outcom	e (s) (C	Os): At	the end	of this	course,	the stud	ents wil	l be abl	e to:				
CO1	Measur	e the flo	ow, disc	harge, a	nd energ	y loss in	i pipes a	ind open	channel	s.(K2)			K. I	
CO2	Demon	strate th	ie chara	cteristics	curves	of pump	s and tu	rbines.(K3)					
CO3			1000							y conduc			(K5)	
THE RESERVE OF THE PARTY OF THE		The second second	Remem	ber: K	2 – Und	erstand:	K3 – A ₁	pply: I	ζ4 – Ana	alyze: K5	- Evalua	ate:		
CO – P	O Mappi	ing								nge.				
co							Pos						P	SOs
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
COI	2	2	3	3	1	2	1	1	1	1	2	- 1	2	2
CO2	2	3	3	3	2	2	2	1	1	1	2	2	2	2
CO3	2	3	2	2	2	2	2	1	1	-1	3	3	2	2
CO (Avg)	2	2.6	2.6	2.6	1.6	2	1.6	1	1	1	2.3	2	2	2
	elation l	Level:		1:Sligh	t (Low)			2:Mode	rate (Me	dium)		3:Sub	stantial (ligh)
	3. Flow 4. Deter 5. Deter 6. Perfo 7. Perfo	r-through r-through r-through r-through r-mination r-mination r-mance ormance acteristi acteristi	h variab h orifice on of fric on of mi charact charact cs of Pe cs of Fr	le duct a e, mouth etion coe nor losse eristics of eristics of lton who ancis tur	rea - Be piece, ar efficient es of centri of recipr cel turbin	rnoulli's ad notch in pipes fugal pu ocating	es experii		peed / V	ariable s	peed)			
	11. Study	y of the	impact (of jet on	a flat pl	ate (non	mal/incl	ined)						
												T	OTAL: 3	0 Hour
REFER	ENCES:							THE		146				
1.										look Hou				
2.	Dr. R. I		al, A Te	xt book	of Fluid	Mechan	rics and	Hydraul	ic Mach	ines, Lax	mi Public	cations P	vi Lid, Ni	nth

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COUR	COURSE CODE COURSE NAME L T P								
U19	CE406	CONCRETE AND HIGHWAY LABORATORY	AY LABORATORY 0 0 2						
Course	Objective (s)	: The Purpose of learning this course is to:							
1.	To impart k	nowledge in studying the behaviour of concrete in fresh and harde	ned condition	ons.					
2.	To gain kno	wledge on the characteristics of aggregates.							
3.	To understa	nd the performance of bitumen by conducting various tests.							
Course	Outcome (s)	(COs): At the end of this course, the students will be able to:							
CO1	Analyze the	various properties of concrete.(K3)							
CO2									
CO3									
Knowle	wledge Level: K1 – Remember: K2 – Understand: K3 – Apply: K4 – Analyze: K5 – Evaluate:								
CO - PO	- PO Manning								

		Pos												PSOs	
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2	2	3	3	1	2	1	1	1	1	2	1	2	2	
CO2	2	3	3	3	2	2	2	1	1	1	2	2	2	2	
CO3	2	3	2	2	2	2	2	1	1	1	3	3	2	2	
CO (Avg)	2	2.6	2.6	2.6	1.6	2	1.6	1	1	1	2.3	2	2	2	

3:Substantial (High) 1:Slight (Low) 2:Moderate (Medium) Correlation Level:

TESTS ON FRESH CONCRETE

- a) IS methods (10262-2019)
- b) Slump cone test
- c) Compaction factor test
- d) Self-compacting concrete test

TESTS ON HARDENED CONCRETE

- a) Compressive Strength test
- b) Split tensile strength test
- c) Flexural strength test
- d) Modulus of Elasticity test
- e) Rebound hammer (Demonstration)
- f) UPV test (Demonstration)

TEST ON AGGREGATES

a) Los Angeles Abrasion Test

TEST ON BITUMEN

- a) Specific Gravity of Bitumen
- b) Penetration Test
- c) Viscosity Test
- d) Softening Point Test
- e) Ductility Test

TOTAL: 30 Hours

REFERENCES: 1. Shetty, M.S., "Concrete Technology", Theory & Practice, S.Chand and Co, 2019. 2. S. K. Khanna, C. E. G. Justo., "Highway Engineering", Nem Chand & Bros, New Delhi, 2018, Revised 10th 2. Edition 3. IS 10262: 2019, Concrete Mix Proportioning — Guidelines (Second Revision), January 2019. 3. 4. 4. Concrete Mix Design ACI 211.1-91

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REGULATION 2019 / FOURTH SEMESTER

COUR	SE COD	E			C	OURSE	NAME			142	L	T	P	C
U19	CE407			Envir	onment	al Engir	neering 1	Labora	tory		0	0	2	1
The second	Objective	e (s): Tl	he Purp	ose of le	earning	this cou	rse is to):						
1.									stewater	as per Ir	dian Sta	ndards.		
2.	Acclain	suitabl	le level	of treatm	nent for	the wate	r and wa	astewate	r sample	es accusto	med.			
3.	Assign	suitable	concep	ts for pro	edicting	the solu	tion thro	ough the	conduct	ion of ex	periment	s over wa	ter and	
	wastewa	ater sam	ples giv	ven.										
	Outcome										140)			
CO1	Test the water and wastewater and their different characteristics as per standard.(K2) Recommend the degree of treatment required for the water and wastewater.(K4)													
CO2													+(IZ5)	
CO3												experimen	it(K5)	
	dge Leve		Rememl	ber: K.	2 – Unde	erstand:	K3 – Ap	opty: K	4 – Ana	ilyze: K5	- Evarua	ne.		
CO – P	O Mappi	ng					Dee						pç	SOs
CO							Pos							
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1	1	1	1	-	1	1	-	-		-	1	1
CO2	2	2	1	1	2	-	2	1		-	-	<u> </u>	1	2
CO3	1	1	1	1	1	-	1	1	-	1 -	-	-	1	1
CO (Avg)	1.3	1.3	1	1	1.3	-	1.3	1	-	-	-	-	1	1.3
	relation I	evel:		1:Sligh	it (Low)			2:Mode	rate (Me	edium)		3:Sub	stantial (I	High)
	experime Sampling		servation	n metho	ds and s	ignificar	nce of ch	aracteri	zation of	f water ar	ıd wastev	vater(Stu	dy experi	ment).
	Determina													
	Determina	tion of	Chloride	es										
4. [Determina	tion of	Hardnes	SS*										
5. I	Determina	tion of	Total-S	olids, Su	ispended	d solids,	Volatile	and Fix	ed solid	S				
6. I	Determina	tion of	Optimu	m Coagu	ılant Do	sage								
7. I	Determina	tion of	Residua	l Chlorii	ne & De	terminat	ion of A	vailable	Chlorin	e in Blea	ching po	wder		
	Determina			ed Oxyg	en									
	Determina													
	Determina										16-11			
	ntroduction	on to Ba	cteriolo	gical Ar	alysis (Study ex	perimer	nt).					OTAL	00 II
				APPENDING TO								1	OTAL: 3	ou Hou
11. 1														
11. 1		Charles Control	ods for t	he exam	ination	of water	and was	stewater	, APHA.	, 23rd Ed	ition, Wa	shington		
11. 1 REFER	Standar 2017.	d metho												
11. 1	Standar 2017.	d metho										h Edition		

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REGULATION 2019 / FOURTH SEMESTER

U19	SE COD	E			CO	OURSE	NAME				L	T	P	C
	CE903			ELEM	ENTS C	F BUII	LDING	PLANN	ING		3	0.	0	3
Course	Objective	e (s): Tl	ie Purp	ose of le	earning	this cou	rse is to	:			1400			
1.	Underst	and the	concept	of Buile	ding dra	wing an	d approv	al proce	edures.					
2.	Analyze the requirements of Building with their standards.													
3.	Signify the various types of structures with desired purposes. Understand the concept of Green building with the evaluation procedure.													
4.	Underst	and the	concept	of Gree	en buildi	ng with	the eval	uation p	rocedure	e				
5.	Prepare	the doc	uments	of the bu	uilding t	o sancti	on autho	rities.						
Course	Outcome								be able	e to:				
CO1	Plan the	resider	tial bui	lding as	per func	tion req	uiremen	ts.(K1)						
CO2	Design various elements of the building(K3) Comprehend the provisions and standards of housing elements.(K4)													
CO3														
CO4										ples(K5)				
CO5	Formula	ate and	design th	he housi	ng layou	its by va	arious sta	andards	of the bu	uilding(K	(3)			STATE OF THE PARTY
Knowle	dge Leve	I: K1 – I	Rememb	per: K2	2 – Unde	erstand:	K3 - Ap	pply: K	(4 – Ana	alyze: K5	– Evalua	ite:		
CO – PO	O Mappi	ng											Ι	
	Pos											PS	SOs	
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	3	1	2	1	- 3	1	1	-	-	3	2	2
CO2	3	1	3	1	2	1	3	1	1	-		3	2	2
CO3	3	1	3	1	1	1	3	1	1	-	-	2	2	2
CO4	2	2	3	1	1	1	3	2	1	-	- 1	2	2	1
CO5	2	2	3	1	1	1	3	2	1	-	-	2	2	1
CO (Avg)	2.6	1.4	3	1	1.4	1.	3	1.4	1	-	-	2.4	2	1.6
	elation I	evel:		1:Sligh	it (Low)			2:Mode	rate (Me	edium)		3:Sub	stantial (High)
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2.	Sahu G.C, Joygopal Jena, "Building Material's and Construction", McGraw Hill Education (India) Pvt. Ltd, New Delhi, 2015.
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1.	Shah M.G. Kalec. M. and Patki SY, "Building Drawing". Tata Mcgraw Hill, New Delhi, 2012.

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Course	Objective	e (s): Tl	he Purp	ose of le	arning	this cou	rse is to							
1.	Describ	e the im	portance	e of ener	gy resou	urces, th	eir avail	ability, a	and cons	servation	for sustai	nability g	goals.	
2.	Study a	nd ident	tify the r	nethods	adopted	to make	e the bui	lding en	ergy eff	icient.				
3.	Gain kn	owledge	e about	the use o	of constr	uction n	naterials	based o	n emboo	lied energ	gy values	• 4 4 4 4 6		
4.	Study a	bout dif	ferent gr	een buil	ding rat	ing syste	ems with	real-tir	ne exam	ples.				
5.	Create a	awarene	ss about	clean de	evelopm	ent med	hanisms	and the	role of	UNFCCC	in susta	inability.		
Course	Outcome	(s) (CC	Os): At 1	he end	of this c	course, t	he stud	ents will	be able	e to:				
CO1	Acquire	a basic	underst	anding o	of the gr	een buil	ding con	cept and	dassocia	ited resou	rces. (K	1)		
CO2	Acquire a basic understanding of the green building concept and associated resources. (K1) Analyze the various methods to design green building parameters. (K3)													
CO3	Underst	tand the	availabi	lity of c	onstruct	ion mate	erials for	energy.	-efficien	t constru	ction (K4	1)		
CO4				een buil										
CO5										echanism	(K2)			
Knowle	dge Leve	l: K1 –	Remem	ber: K	2 - Und	erstand:	K3 – A	pply: I	(4 – An	alyze: K5	– Evalu	ate:		
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CO1	1	-	2	1	2	2	3	3	1	-	-	1	2	1
CO2	2	1	3	2	1	1	1	1	1	-	- U	1	2	1
CO3	1	2	3	2	3	2	2	1	1	- 0	-	2	_ 2	1
CO4	1	1	2	3	2	2	3	2	1	-	-	2	1	2
CO5	1	3	3	2	2	2	1	1	1	-	-	2	-1	2
CO	1.2	1.8	2.6	2.0	2.0	1.8	2.0	1.6	1.0	-	-	1.6	1.6	1.4
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REGULATION 2019 / FOURTH SEMESTER

2.	KILBERT, Charles, (2016) Sustainable construction: Green Building Design and Delivery John Wiley and Sons.
3.	BROWN, G.Z. and DEKAY, Mark, 2001. Sun, Wind & Light - Architectural Design Strategies, Second Edition, John Wiley & sons, Inc.
REFEI	RENCES:
1.	ECBC Code 2007 (Edition 2008) published by Bureau of Energy Efficiency, New Delhi
2.	Bureau of Energy Efficiency Publications - rating System, TERI PUBLICATIONS.
3.	GRIHA Rating System, LEED Publications

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Dean (R&D) of Civil Engg.
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Course Outcomes

At the end of the course, the students will be able to,

- Analyze the basics of Indian traditional knowledge in modern scientific perspectives.
- 2. Explain the basics of Vedic science and its applications in modern days.
- 3. Discuss the introduction and objectives of modern science.
- 4. Describe the contribution of Noble laurates for India's achievements in Science and Technology.
- 5. Analyze the various traditional practices for holistic health care of human beings.

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		Programme Outcomes (POs) and Programme Specific Outcome (PSOs)														
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CO2	2	2	2	-	_	2	<u>-</u>	-	<u>-</u>	-	-	-	-		2	
CO3	3	2	2	-	-	2	-	-	-	-	-	_		-	2	
CO4	-3	-2	-2	-	-	⁻ 2	-	-	-	-	-	_	-	_	2	
CO5	2	2	2	-	-	2	_	-	-	-	-	-	-	-	2	

Unit I

- Introduction to Vedas
- Traditional methodology of Veda Sat Angas
- Types of Vedas and their application
- Sub Veda Ayurveda their modern day application

Unit II

- Basics of Applied Vedic Science
- · Modern day application of Vedas and procedure
- Ancient Indian Scientific thoughts
- Introduction to the Vedic language "Sanskrit"

UNIT - III- Modern Science

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- Introduction modern science
- Objectives modern science
- · Architecture in ancient India

UNIT - IV Technology

- India's contribution to science and technology (from ancient to modern)
- Nobel laureates of Indian origin and their contribution
- India in space
- Latest achievement from Jan 2017

UNIT - V- Yoga and Holistic Health Care

- · Fundamentals of yoga and holistic health
- Human biology
- · Diet and nutrition
- Life management
- Contemporary yogic models case study

Reference Books

- 1. V. Sivaramakrishna (Ed.), Cultural Heritage of India-Course Material, Bharatiya Vidya Bhavan, Mumbai, 5th Edition, 2014
- 2. Swami Jitatmanand, Modern Physics and Vedant, Bharatiya Vidya Bhavan
- 3. RN Jha, Science of Consciousness Psychotherapy and Yoga Practices, Vidyanidhi Prakasham, Delhi, 2016.
- Roshan Dalal The Vedas: An Introduction to Hinduism's Sacred Texts, Penguin Books 2014. ISBN 13: 9780143066385
- 5. Raja Ram Mohan Roy, Vedic Physics, Mount Meru Publication ISBN: 9781988207049

Total: 30 hours

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M. J. Mariers.

Professor & Head,

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Sona College of Technology,

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						2020				
Semester – IV	U19GE401 - SOFT SKILLS AND APTITUDE - II	L 0	T 0	P 2	C 1	Marks 100				
Course Outcomes						>				
At the end of the co	ourse the student will be able to:									
1. Demonstrate cap	abilities in additional soft-skill areas using hands-on and	or c	ase-s	tud	y ap	proaches				
2. Solve problems	of increasing difficulty than those in SSA-I in given are ming and score 65-70% marks in company-specific interr	as o	f qua							
3. Demonstrate gre	ater than SSA-I level of verbal aptitude skills in English of marks in company-specific internal tests	with	rega	rd to	o gi	ven topics				
	Demonstrating soft-skill capabilities with reference to a. SWOT	o th	e fol	lowi	ing	topics:				
	b. Goal setting									
1.Soft Skills	c. Time management									
	d. Stress management			4						
	e. Interpersonal skills and Intrapersonal skills									
	f. Presentation skills									
	g. Group discussions									
2. Quantitative	Solving problems with reference to the following top	ics:								
Quantonion o	a. Equations: Basics of equations, Linear, Quadratic E Higher Degree and Problem on ages.	quai	ions	10						
Aptitude	b. Logarithms, Inequalities and Modulus									
and	c. Sequence and Series: Arithmetic Progression, Geom	etric	Pro	gres	sior	1,				
	Harmonic Progression, and Special Series. d. Time and Work: Pipes & Cistern and Work Equivalent	2000								
Logical				Roat	c &r					
Reasoning	e. Time, Speed and Distance: Average Speed, Relative Speed, Boats & Streams, Races and Circular tracks and Escalators.									
	f. Arithmetic and Critical Reasoning: Arrangement, Se	aue	neins	1.						
	Scheduling, Network Diagram, Binary Logic, and Lo	ogic	al Co	nne	ctio	n.				
	g. Binary Number System Binary to decimal, Octal, He	exad	ecim	al						
	Demonstrating English language skills with reference	e to	the f	ollo	win	g topics:				
	a. Critical reasoning									
3. Verbal	b. Theme detection									
	c. Verbal analogy									
Aptitude	d. Prepositions									
	e. Articles f. Cloze test									
	g. Company specific aptitude questions									
	6. Company specific aputude questions									

Total: 30 Hours

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