गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
कोनी, बिलासपुर - 495009 (छ.ग.)

Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur – 495009 (C.G.)

List of Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework

Department : *Computer Science and Engineering*

Programme Name : *B.Tech.*

Academic Year : 2024-25

Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework:

Sr. No.	Course Code	Name of the Course
01.	FOUBTC2	ENVIRONMENTAL SCIENCE AND ECOLOGY
02.	ECUATH2	HUMAN VALUES AND ETHICS
03.	LAPBTX4	CONSTITUTION OF INDIA
04.	LAUBTC1	INDIAN CONSTITUTION
05.	NSUALS1	NSS
06.	ITPATC1	RESEARCH METHODOLOGY AND IPR
07.	CSE7100	RESEARCH METHODOLOGY IN ENGINEERING

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Scheme and Syllabus

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Scheme of Teaching and Evaluation 2022-2023 (As per NEP-2020)
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
(Effective from the Academic year 2023-2024)

I-SEMESTER BTech ECE/ IT/CSE

S.N.	Course Code	Course Title	Teaching Hours/ week			Examination				Credits
			Theory lectures	Tutorial	Practical/ Drawing	Examination in Hours	CIA Marks	SEA Marks	Total Marks	
			L	T	P					
1	AMUATB4	Engineering Mathematics - B	3	1	-	03	40	60	100	4
2	PPUATB2	Engineering Physics	3	1	-	03	40	60	100	4
3	ITUATE2	Introduction to Information Technology	3	-	-	03	40	60	100	3
4	ECUATE3	Basic Electrical Engineering	3	-	-	03	40	60	100	3
5	ELUATH1	English for Communication	3	-	-	03	40	60	100	3
6	ECUATH2/ CSUATH2/ITUATH2	Human Values & Ethics	1	-	-	02	50	-	50	1
7	PPUALB2	Engineering Physics Laboratory	-	-	2	03	25	25	50	1
8	MEUALL1	Engineering Graphics	1	-	3	03	25	25	50	3
9	ECUALE3	Basic Electrical Engineering Laboratory	-	-	2	03	25	25	50	1
10	NSUALS1	NSS	-	-	2	01	25	25	50	1
Total			**17**	**2**	**09**	**27**	**350**	**400**	**750**	**24**

Note: AM:Mathematics, PP:Physics, ME: Mechanical Engineering, IP: Industrial & Production Engineering, CE: Civil Engineering, CS: Computer Sc. & Engg., IT: Information Technology, PE: Physical Education, NS: NSS, U: Undergraduate, T: Theory, L: Laboratory,

BASIC SCIENCE (B)	ENGINEERING SCIENCE (E)	SKILL ENHANCEMENT COURSE (L)	HUMANITIES SCIENCE (H)	MANDATORY COURSE (C)	EXTRA-CURRICULAR ACTIVITIES (S)
1. Mathematics – A 2. Physics 3. Chemistry 4. Mathematics - B	1. Engineering Mechanics 2. Introduction to Information Technology 3. Basic Electrical Engineering 4. Basic Electrical and Electronics Engineering 5. Computer Programming 6. Basic Communication Engineering	1. Engineering Graphics 2. Engineering Workshop Practices	1. English for communication 2. Human Values and Ethics	1. Indian Constitution 2. Environmental Science & Ecology	1. NSS 2.Sports and Yoga

Credit Definition:

- 1-hour lecture (**L**) per week per semester = **1Credit**
- 1-hour tutorial (**T**) per week per semester = **1Credit**
- 2-hour Practical/Drawing(**P**) per week per semester = **1 Credit**

- **Four credit** courses are to be designed for **50** hours of Teaching-Learning process.
- **Three credit** courses are to be designed for **40** hours of Teaching-Learning process.
- **Two credit** courses are to be designed for **30** hours of Teaching-Learning process.
- **One credit** courses are to be designed for **15** hours of Teaching-Learning process

Note: The above is applicable only to THEORY courses

AICTE Activity Points to be earned by students admitted to B.Tech. programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines):

Over and above the academic grades, every regular student admitted to the 4 years Degree program and every student entering 4years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.

The activities can be spread over the years, any time during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) donot affect SGPA/CGPA and shall not be considered for vertical progression.

Eligibility for UG Certificate:

A. **Undergraduate Certificate course will be offered by all departments of SoS(E&T), GGV.**
B. **For applicability of UG Certificate, the candidate who wants to exit after completing 1st year (02 semesters) BTech degree with 10 credits of skill-based courses lasting two months, including atleast 06 credits job specific internship/apprenticeship with NHEQF level 5/UCF level 4.5.**
C. **A student shall report to the concerned Head on or before the date notified by the Department/School/University, if he/she is interested to exit with UG Certificate**

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SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Scheme of Teaching and Evaluation 2022-2023 (As per NEP-2020)
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
(Effective from the Academic year 2023–2024)

II-SEMESTER BTech ECE/ IT/CSE

S. N.	Course Code	Course Title	Teaching Hours/week			Examination				Credits
			Theory lectures	Tutorial	Practical/ Drawing	Examination in Hours	CIA Marks	SEA Marks	Total Marks	
			L	T	P					
1	AMUBTB1	Engineering Mathematics - A	3	1	-	03	40	60	100	4
2	CYUBTB3	Engineering Chemistry	3	-	-	03	40	60	100	3
3	CSUBTE5	Computer Programming	3	-	-	03	40	60	100	3
4	ECUBTE7	Introduction to Electronics & Communication Engineering	3	-	-	03	40	60	100	3
5	LAUBTC1	Indian Constitution	1	-	-	01	50	-	50	1
6	FOUBTC2	Environmental Science and Ecology	2	-	-	03	40	60	100	2
7	CYUBLB3	Engineering Chemistry Laboratory	-	-	2	03	25	25	50	1
8	IPUBLL2	Engineering Workshop Practices	-	-	2	03	25	25	50	1
9	CSUBLE5	Computer Programming Laboratory	-	-	2	03	25	25	50	1
10	PEUBLS2	Sports and Yoga	-	-	2		25	25	50	1
Total			**15**	**1**	**08**	**25**	**350**	**400**	**750**	**20**

Note: AM:Mathematics, PP:Physics, ME: Mechanical Engineering, IP: Industrial & Production Engineering, CE: Civil Engineering, CS: Computer Sc. & Engg., IT: Information Technology, PE: Physical Education, FO: Forestry, LA: Law, NS: NSS, U: Undergraduate, T: Theory, L: Laboratory,

BASIC SCIENCE (B)	ENGINEERING SCIENCE (E)	SKILL ENHANCEMENT COURSE (L)	HUMANITIES SCIENCE (H)	MANDATORY COURSE (C)	EXTRA-CURRICULAR ACTIVITIES (S)
1. Mathematics – A 2. Physics 3. Chemistry 4. Mathematics - B	1. Engineering Mechanics 2. Introduction to Information Technology 3. Basic Electrical Engineering 4. Basic Electrical and Electronics Engineering 5. Computer Programming 6. Basic Communication Engineering	1. Engineering Graphics 2. Engineering Workshop Practices	1. English for communication 2. Human Values and Ethics	1. Indian Constitution 2. Environmental Science & Ecology	1. NSS 2.Sports and Yoga

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C. **A student shall report to the concerned Head on or before the date notified by the Department/School/University, if he/she is interested to exit with UG Certificate**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY, GGV,
BILASPUR, C.G. (INDIA)

SCHEME OF EXAMINATION

M.TECH. COMPUTER SCIENCE AND ENGINEERING

M.Tech. I-Semester

Sl.	Course Type/ Code	Subjects	Periods/Week			Evaluation			Credits
			L	T	P	IA	ESE	Total	
1	CSPATT1	Advanced Data Structure	3	0	0	40	60	100	3
2	CSPATT2	Advanced Computer Network	3	0	0	40	60	100	3
3	ITPATC1	Research Methodology and IPR	2	0	0	-	50	50	2
4	CSPATP1 CSPATP2 CSPATP3	Professional Elective -I 1. Logics of Computer Science 2. Advance Computer Architecture 3. Multimedia System	3	0	0	40	60	100	3
5	CSPATP4 CSPATP5 CSPATP6	Professional Elective -II 1. Advanced Artificial Intelligence 2. Specialized Machine Learning Multimedia System 3. Soft Computing	3	0	0	40	60	100	3
6	CSPATP7 CSPATP8 CSPATP9	Professional Elective -III 1. Cluster and Grid Computing Specialized 2. High Performance Network 3. Ad Hoc and Wireless Sensor Network.	3	0	0	40	60	100	3
7.	CSPALT1	Advanced Data Structure Lab	0	0	3	30	20	50	2
Total			17	0	3	230	370	600	19

M.Tech. II-Semester

Sl.	Course Type/ Code	Subjects	Periods/Week			Evaluation			Credits
			L	T	P	IA	ESE	Total	
1.	CSPBTT1	Advanced Algorithm	3	0	0	40	60	100	3
2.	CSPBTT2	Advanced Digital Image Processing	3	0	0	40	60	100	3
3.	CSPBTP1 CSPBTP2 CSPBTP3	Professional Elective-I 1. Data Science 2. Software Process and Project Management 3. GPU Computing	3	0	0	40	60	100	3
4.	CSPBTP4 CSPBTP5 CSPBTP6	Professional Elective-II 1. Data Base Engineering 2. Cryptography and Network Security 3. Multi-processor System	3	0	0	40	60	100	3
5.	MSPBTO1 IPPBTO2 IPPBTO3 CEPBTO4 MEPBTO5 CHPBTO6 ECPBTO7 MCPBTO8	Open Elective-1 1. Business Analytics 2. Industrial Safety 3. Operations Research 4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy 7. IoT 8. MOOCs	3	0	0	40	60	100	3
6.	CSPALT1	Advanced Algorithm Lab	0	0	3	30	20	50	2
7.	CSPALT2	Advanced DIP Lab	0	0	3	30	20	50	2
8.	ELPBTX1 PEPBTX2 CEPBTX3 LAPBTX4	Audit Course/Value Added Course English for Research Paper Writing Stress Management by Yoga Disaster Management Constitution of India	2	0	0	40	60	100	2
Total			17	0	06	300	400	700	21

Note: Under MOOCs the students have to opt any subject other than Computer Science and Engineering from NPTEL/UGC SWAYAM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF STUDIES (ENGINEERING AND TECHNOLOGY)
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G)
EVALUATION SCHEME FOR Pre- Ph.D. COURSE WORK

EFFECTIVE FROM SESSION 2021-2022

S. No.	Name of Subject	Subject Code	Periods /Week L-T-P	ESE Duration	ESE MARKS		Credits
					Max	Min	
1	Research Methodology in Engineering	IT7100	3-1-0	3Hrs	100	50	4
2	Elective -I	CSE71XX	3-1-0	3Hrs	100	50	4
3	Elective -II	CSE71XX	3-1-0	3Hrs	100	50	4
4	Seminar	IT7101	-	-	Qualified/ Not Qualified		0
	Total		9-3-0		300	150*	12

LIST OF ELECTIVES **

S.N.	Name of the Subject	Subject Code
1	Network Security	CSE7102
2	Simulation & Modeling	CSE7103
3	Computer Vision	CSE7104
4	Machine Learning	CSE7105

Duration of Semester will be 6 months

- Candidate has to score minimum 60% of the aggregate marks to qualify in ESE.
- Two core subjects as Electives (4 Credits each) to be decided by the DRC.

ESE: End Semester Examination L: Lecture T: Theory P: Practical
Max: Maximum marks in ESE;
Min: Minimum pass Marks in each subject as 50%

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	ECUATH2 (for ECE) CSUATH2 (for CSE) ITUATH2 (for IT)	L	T	P	CT-1	CT-II	Attendance & Assignments	TOTAL	-	50	1
Subject:	HUMAN VALUES & ETHICS	1	0	-	20	20	10	50			

COURSE OBJECTIVE:

1. To create an awareness on Engineering Ethics and Human Values.
2. To understand social responsibility of an engineer.
3. To appreciate ethical dilemma while discharging duties in professional life.

UNIT I: Introduction to Value Education

1. Value Education, Definition, Concept and Need for Value Education.
2. The Content and Process of Value Education.
3. Basic Guidelines for Value Education.
4. Self exploration as a means of Value Education.
5. Happiness and Prosperity as parts of Value Education.

UNIT II: Harmony in the Human Being

1. Human Being is more than just the Body.
2. Harmony of the Self ('I') with the Body.
3. Understanding Myself as Co-existence of the Self and the Body.
4. Understanding Needs of the Self and the needs of the Body.
5. Understanding the activities in the Self and the activities in the Body.

UNIT III: Harmony in the Family and Society and Harmony in the Nature

1. Family as a basic unit of Human Interaction and Values in Relationships.
2. The Basics for Respect and today's Crisis: Affection, e, Guidance, Reverence, Glory,Gratitude and Love.
3. Comprehensive Human Goal: The Five Dimensions of Human Endeavour.
4. Harmony in Nature: The Four Orders in Nature.
5. The Holistic Perception of Harmony in Existence.

UNIT IV: Social Ethics

1. The Basics for Ethical Human Conduct.
2. Defects in Ethical Human Conduct.
3. Holistic Alternative and Universal Order.
4. Universal Human Order and Ethical Conduct.
5. Human Rights violation and Social Disparities.

UNIT V: Professional Ethics

1. Value based Life and Profession.
2. Professional Ethics and Right Understanding.
3. Competence in Professional Ethics.
4. Issues in Professional Ethics – The Current Scenario.
5. Vision for Holistic Technologies, Production System and Management Models.

TEXT/ REFERENCE BOOKS:

1.A.NTripathy, New Age International Publishers, 2003.
2.Bajpai. B. L , , New Royal Book Co, Lucknow, Reprinted, 2004
3.Bertrand Russell Human Society in Ethics & Politics
4.Corliss Lamont, Philosophy of Humanism
5.Gaur. R.R. ,Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
6.Gaur. R.R. ,Sangal. R ,Bagaria. G.P, Teachers Manual Excel Books, 2009.
7.I.C. Sharma . Ethical Philosophy of India Nagin & co Julundhar
8.Mortimer. J. Adler, – Whatman has made of man
9.William Lilly Introduction to Ethic Allied Publisher

COURSE OUTCOME:

On completion of this course, the students will be able to

1. Understand the significance of value inputs in a classroom and start applying them in their life and profession
2. Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
3. Understand the role of a human being in ensuring harmony in society and nature.
4. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

SYLLABUS	(SEMESTER-I)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE Viva/ Assessment	Grand total	Credits
Subject Code:	NSUALS1	L	T	P	Attendance	Activities	TOTAL	25	50	01
Subject:	NSS	-	-	2	5	20	25			

S.N.	PROGRAM HEADS	HOURS/SEM
1	Cleaning program	06
2	Plantation	06
3	Health Camp/Special Days celebration	10
4	Awareness program/Rally	06

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	LAUBTC1	L	T	P	CT-1	CT-II	Attendance & Assignments	TOTAL			
Subject:	INDIAN CONSTITUTION	1	-	-	20	20	10	50	-	50	01

COURSE OBJECTIVE:

- To the importance of preamble of the constitution of India.
- To understand the fundamental rights and duty as a citizen of India.
- To understand the functioning of union and state government and their inter-relationship.

UNIT I: Introduction: Constitution-meaning of the term, Sources and constitutional theory, Features, Citizenship. Preamble.

UNIT II: Fundamental Rights and Duties: Fundamental Rights, Fundamental Duties, Directive Principles of State Policy

UNIT III: Union Government: Structure of Indian Union: Federalism, Centre-State relationship President: Role. Power and position, Prime Minister and council of ministers, Cabinet and Central Secretariat, Lok Sabha. Rajya Sabha

UNIT IV: State Government: Governor: Role and position, Chief Minister and council of ministers, State Secretariat

UNIT V: Relationship between Centre and States: Distribution of Legislative Powers, Administrative Relations, Coordination between States

COURSE OUTCOME: At the end of the course students will be able to:

- Describe the salient features of the Indian Constitution
- List the Fundamental Rights and Fundamental Duties of Indian citizens
- Describe the Directive Principles of State Policy and their significance

TEXT/ REFERENCE BOOKS:

1. Constitution of India, V.N. Shukla
2. The Constitutional Law of India, J.N. Pandey
3. Indian Constitutional Law. M.P. Jain

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code:	FOUBTC2	L	T	P	CT-1	CT-II	Attendance & Assignments	TOTAL	60	100	02
Subject:	ENVIRONMENTAL SCIENCE AND ECOLOGY	2	-	-	15	15	10	40			

UNIT I: Introduction: Environment - Components of Environment Ecosystem: Types & Structure of Ecosystem, Balanced ecosystem Human Activities – Food, Shelter, Economic & Social Security.
Definition, Scope and basic principles of ecology and environment, Fundamentals of Ecology and Ecosystem – Structural and Functional Components. Food chain & Food webs. Ecological pyramids; Energy flow

UNIT II: Air Pollution & Automobile Pollution: Definition, Effects – Global Warming, Acid rain & Ozone layer depletion, controlling measures.

UNIT III: Solid Waste Management, E - Waste Management & Biomedical Waste Management - Sources, Characteristics & Disposal methods.

UNIT IV: Natural Resources, Water resources – Availability & Quality aspects, Water borne diseases & water induced diseases, Fluoride problem in drinking water, Mineral resources, Forest Wealth, Material Cycles – Carbon Cycle, Nitrogen Cycle & Sulphur Cycle.

UNIT V: Energy – Different types of energy, Conventional sources & Non Conventional sources of energy: solar energy, Hydro electric energy, Wind Energy, Nuclear energy, Biomass & Biogas Fossil Fuels, Hydrogen as an alternative energy.

TEXT/ REFERENCE BOOKS:

1. Fundamentals of Ecology (3rd Ed.) 2001- MC Dash, Tata - McGraw Hill, New Delhi.
2. Introduction to Environmental Engg. (1991). - GM Masters, Prentice Hall of India.
3. Benny Joseph (2005), "Environmental Studies", Tata McGraw – Hill Publishing Company Limited.
4. R.J.Ranjit Daniels and Jagadish Krishnaswamy, (2009), "Environmental Studies",Wiley India Private Ltd., New Delhi.
5. R Rajagopalan, "Environmental Studies – From Crisis to Cure",Oxford University Press, 2005,
6. Aloka Debi, "Environmental Science and Engineering", Universities Press (India) Pvt. Ltd. 2012

Subject: CSPATC1	Research Methodology and IPR (IPPATC1)	Credits			
		L	T	P	Total
Teaching Scheme:	Lectures: 2 hours/week	2	0	0	2

Course outcomes:	At the end of the course, students will be able to
1	Understand research problem formulation.
2	Analyze research related information
3	Follow research ethics
4	Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property
5	Right to be promoted among students in general & engineering in particular.
6	Understand research problem formulation.

Syllabus Contents:

- **Introduction and Design of research**: Meaning, objectives and significance of research, types and parameters of research, research process, identification and definition of the research problem, definition of construct and variables, pure and applied research design, exploratory and descriptive design methodology, qualitative vs. quantitative research methodology, field studies, field experiments vs. laboratory experiments, research design in social and physical sciences.

- **Data and Methods of Data Collection**: Survey, assessment and analysis: data collection, primary and secondary sources of data, Collection of primary data through questionnaire and schedules. Collection of secondary data, processing and analysis of data. Sample survey, simple random sampling, stratified random sampling, systematic sampling, cluster sampling, area sampling and multistage sampling. Pilot survey, scaling techniques, validity & reliability.

- **Data Analysis:** Procedure for testing of hypothesis, the null hypothesis, determining levels of significance, type i and ii errors, grouped data distribution, measures of central tendency, measures of spread/dispersion, normal distribution, analysis of variance: one way, two way, chi square test and its application, students 'T' distribution, non-parametric statistical techniques, binomial test. Correlation and regression analysis – discriminate analysis – factor analysis – cluster analysis, measures of relationship

- Research report preparation and presentation: Review of literature: historical survey and its necessity, layout of research plan, meaning, techniques and precautions of interpretation, types of report: technical report, popular report, report writing – layout of research report, mechanics of writing a research report. Writing bibliography and references.

- Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

References:

- Research in education, By J W Best and J V Kahn, Pearson/ Allyn and Bacon.
- Research Methodology – Methods and Techniques, C K Kothari, New Age International.
- Design and Analysis of Experiments, D C Montgomery, Wiley.
- Applied Statistics & Probability for Engineers, D C Montgomery & G C Runger, Wiley.
- Management Research Methodology: Integration of Principles, Methods and Techniques, K N Krishnaswamy, A I Sivakumar and M Mathiranjan, Pearson Education.

AUDIT 1 and 2: CONSTITUTION OF INDIA

Course Objectives:

Students will be able to:

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
2. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indiannationalism.
3. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the IndianConstitution.

Syllabus

Units	Content	Hours
1	• **History of Making of the Indian Constitution:** History Drafting Committee, (Composition & Working)	4
2	• **Philosophy of the Indian Constitution:** Preamble Salient Features	4
3	• **Contours of Constitutional Rights &Duties:** • FundamentalRights • Right toEquality • Right toFreedom • Right againstExploitation • Right to Freedom ofReligion • Cultural and EducationalRights • Right to ConstitutionalRemedies • Directive Principles of StatePolicy • FundamentalDuties.	4
4	• **Organs ofGovernance:** • Parliament • Composition • Qualifications andDisqualifications • Powers andFunctions • Executive • President • Governor • Council ofMinisters • Judiciary, Appointment and Transfer of Judges,Qualifications • Powers andFunctions	4

5	• **LocalAdministration:** • District's Administration head: Role andImportance, • Municipalities: Introduction, Mayor and role of Elected Representative CEO of MunicipalCorporation. • Pachayati raj: Introduction, PRI: ZilaPachayat. • Elected officials and their roles, CEO Zila Pachayat: Position androle. • Block level: Organizational Hierarchy (Different departments), • Village level: Role of Elected and Appointedofficials, • Importance of grass rootdemocracy	4
6	• **ElectionCommission:** • Election Commission: Role andFunctioning.	4
	• Chief Election Commissioner and ElectionCommissioners. • State Election Commission: Role andFunctioning. • Institute and Bodies for the welfare of SC/ST/OBC andwomen.	

Suggested reading

1. TheConstitutionofIndia,1950(BareAct),GovernmentPublication.
2. Dr.S.N.Busi,Dr.B.R.AmbedkarframingofIndianConstitution,1stEdition,2015.
3. M.P.Jain,IndianConstitutionLaw,7thEdn.,LexisNexis,2014.
4. D.D.Basu,IntroductiontotheConstitutionofIndia,LexisNexis,2015.

Course Outcomes:

Students will be able to:

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indianpolitics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualizationofsocialreformsleadingtorevolutioninIndia.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct electionsthroughadultsuffrageintheIndianConstitution.
4. DiscussthepassageoftheHinduCodeBillof1956.

Pre-PhD COURSE WORK
RESEARCH METHODOLOGY IN ENGINEERING

Unit 1: PHILOSOPHY AND ETHICS

Introduction to philosophy: nature and scope, concept, branches. Ethics: Definition, moral philosophy, nature of moral judgments and reactions.
Ethics with respect to science and research. Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP).Redundant publication duplicate and overlapping publications, salami slicing. Selective reporting and misrepresentation of data.

Unit 2: ERRORS IN MEASUREMENTS

Types of Errors, Mean Deviation, Standard Deviation and Probable Errors, Propagation of Errors with Summation, Difference, Product and Quotient.
Curve fitting, Method of least square fit, least square fit (straight line) to linear equations and equation reducible to linear equations. Least square fit (parabola) to quadratic equations and equations reducible to quadratic equations.

Unit 3: DATA PROCESSING & ANALYSIS

Literature Survey, Defining the equation and formulating hypothesis/hypotheses. Collection of research data, tabulating and cataloging, Sampling and methods of data analysis. Laboratory Safety Measures, Maintenance of equipment's and proper storage and disposal of materials.

Unit 4: SCIENTIFIC PRESENTATION AND WRITING SKILLS

Survey of literature and presentation of data, one seminar paper-preparation in PowerPoint (which include texts, graphs, pictures, tables, references etc.)-Oral in PowerPoint/poster, development of communication skills in presentation of scientific seminars- eye to eye contact, facing the audience, question & answer sessions etc.
Steps to better writing, flow method, organization of material and style, drawing figures, graphs, tables, footnotes, references etc in research paper.

Unit 5: PUBLICATION ETHICS.

1. Publication ethics: definition, introduction and importance.2. Best practice/standards setting initiatives and guidelines: COPE, WAME, etc. 3. Conflicts of interests 4. Publications misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types 5. Violation of publication ethics, authorship and contributorship ship 6. Identification of publication misconduct complaints and appeals 7. Predatory publishers and journals.

References:

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2. Callahand D & Bok S, Ethics Teaching in Higher Education, Plenum Press, New York, USA (1996).
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4. A. N Tripathi, Human Values, New Age International Publication, New Delhi (2008).
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