Government Polytechnic, Aurangabad.

(An autonomous Institute of Govt. of Maharashtra)

Programme Curriculum Strucutre (6th Revision : Outcome Based Education - 2017-18)

Name of Programme : DIPLOMA IN ELECTRICAL ENGINEERING

First Semester Courses

sr. no.	semester	course code	course Name	Teaching Scheme/Credits				Examination Scheme (Maximum Marks)						
				Theory	Practical	Tutorial	Total Credit	PT	TH	PR	OR	PA (TW)	Total	Compulsory /Optional
1	I	6G101	Basic Mathematics	3	--	1	4	20	80	--	--	--	100	Compulsory
2	I	6G103	Engineering Physics	3	2	--	5	20~	80~	25@	--	25	150	Compulsory
3	I	6G201	Engineering Graphics	2	2	--	4	--	--	50@	--	50	100	Compulsory
4	I	6G203	Basics of Computer System	--	2	--	2	--	--	25@	--	25	50	Compulsory
5	I	6G301	English	2	2	--	4	20	80	-	--	25	125	Compulsory
	I	6G303	Development of Life Skills	--	2	--	2	--	--	--	25@	25	50	Compulsory
6	I	6G304	Environmental Science	--	2	--	2	--	--	--	--	50	50	Compulsory
Total				**10**	**12**	**1**	**23**	**60**	**240**	**100**	**25**	**200**	**625**	-

Legends : L-Lecture; T-Tutorial/Teacher Guided Theory Practice ; P- Practical; C- Credits; ESE- End Semester Examination; PT – Progressive Test, PA- Progressive Assessment, OR – Oral Examination, PR- Practical Examination ; TW - Term Work, # External, @ Internal, ~ Online Examination.

Government Polytechnic, Aurangabad.

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Programme Curriculum Strucutre (6th Revision : Outcome Based Education - 2017-18)

Name of Programme : DIPLOMA IN ELECTRICAL ENGINEERING

Second Semester Courses

sr. no.	semester	course code	course Name	Teaching Scheme/Credits				Examination Scheme (Maximum Marks)						
				Theory	Practical	Tutorial	Total Credit	PT	TH	PR	OR	PA (TW)	Total	Compulsory /Optional
1	II	6G102	Engineering Mathematics	3	--	1	4	20	80	--	--	--	100	Compulsory
2	II	6G104	Engineering Chemistry	3	2	--	5	20~	80~	25@	--	25	150	Compulsory
3	II	6G202	Workshop Practice	--	3	--	3	--	--	--	--	50	50	Compulsory
4	II	6E201	Basics Electrical Engineering	4	2	--	6	20	80	25@	--	25	150	Compulsory
5	II	6E202	Fundamentals of Electronics	4	2	--	6	20	80	25@	--	25	150	Compulsory
6	II	6E207	Elements of Mechanical engineering	2	2	--	4	--	--	--	25@	25	50	Compulsory
7	II	6G302	Communication Skill	1	2	--	3	--	--	--	25@	50	75	Compulsory
8	II	6G311 Onwards	Non exam credit course(one course to be opted)	--	2	--	2	--	--	--	--	--	--	Optional
Total				**17**	**15**	**1**	**33**	**80**	**320**	**75**	**50**	**200**	**725**	-

Legends : L-Lecture; T-Tutorial/Teacher Guided Theory Practice ; P- Practical; C- Credits; ESE- End Semester Examination; PT – Progressive Test, PA- Progressive Assessment, OR – Oral Examination, PR- Practical Examination ; TW- Term Work, # External, @ Internal, ~ Online Examination.

COURSE TITLE : BASIC MATHEMATICS

COURSE CODE : 6G101

Diploma Programme in which this course is offered	Semester in which offered
CE/ME/EE/ET/IT/CO/AE	First Semester

1. RATIONALE :

This course is classified under foundation level courses and intends to teach students basic facts, concepts and principles of mathematics, as a tool to analise engineering problems. Diploma engineers have to solve the problems in engineering.

Basic mathematics is an attempt to initiate the multi-dimensional logical thinking and reasoning capabilities of the students.

2. COMPETENCY :

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

"**Solve engineering problems by using analytical and systematic approach.**"

3. COURSE OUTCOMES :

Students will be able to

Apply rules of Logarithms in solving simple engineering problems

1. Solve simultaneous equations using concepts of Determinants and Matrices
2. Solve simple engineering problems using concepts of Partial Fractions
3. Solve simple engineering problems by applying formulae of trigonometry.
4. Solve simple engineering problem of function using the different definition of Function
5. Solve simple engineering problem of function using the rules of Limits.

4. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE	PA	
03	01	--	04	80	20	--	--	100
Exam Duration				03 Hrs.	01 Hr.			

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

5. COURSE DETAILS :

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit I Revision	1a.To recall/know the basic concept of Logarithms and Determinant of order 2and3	1.1 Logarithms 1.2 Definition natural and common logarithms 1.3 Laws of logarithm 1.4 Definition of Determinant, Order of Determinant. 1.5 Expansion of Determinant of order 2 and 3. 1.6 Properties of Determinant.
Unit II Determinant And Matrices	2a.Students will be able to Solve simultaneous equations using concepts of Determinants and Matrices	2.1 Cramer's Rule (solution of simultaneous equations in two and three unknowns) 2.1 Definition of matrix: Type of matrix: viz.- null, row, column, Square, diagonal, scalar, unit, Triangular. 2.2 Algebra of matrices –addition, subtraction and multiplication . 2.3 Transpose of a matrix. 2.4 adjoint of a matrix Relation. 2.5 Inverse of matrix by adjoint method. 2.6 Solution of simultaneous equations in two and three Unknowns using Inverse of matrix method.
Unit III Partial Fractions	3a.Students will be able to solve simple problems Using concepts of Partial Fractions	3.1 Definition of Partial fraction, proper and improper fractions, rational fractions. 3.2 To resolve given rational fraction into partial fractions. 3.3 Denominator containing non repeated linear factors. 3.4 Denominator containing repeated linear factors. 3.5 Denominator containing irreducible non-repeated quadratic factors. 3.6 Different types of examples.
Unit IV Trigonometry	4a.Students will be able to Solve simple problems by	4.1 Trigonometric ratios of allied, compound and multiple angles.

	applying using concepts of trigonometry.	4.2 Trigonometric Ratios of allied angles. 4.3 Trigonometric Ratios of compound angles. 4.4 Trigonometric Ratios of multiple angle Product, sum and difference formulae. 4.5 Sub-multiple angles. 4.6 Definition of inverse trigonometric, ratios. 4.7 Principal value of inverse trigonometric ratios. Relation between inverse trigonometric ratios. 4.8 Examples on inverse circular functions.
Unit V Function	5a.Students will be able to Solve the problem of function using the concept of Function	5.1 Cartesian products of sets. 5.2 Definition of relation, definition of function, real value. Function, domain, co-domain of a function. 5.3 Types of Functions. 5.4 Value of the function at given point 5.5 Composite function. 5.6 Different types of examples on functions .
Unit VI Limits	6a. Students will be able to Solve the problem of function using the concept of Limit	6.1Definition and concept of limit, limits of algebraic functions. 6.2 Limits of trigonometric functions. 6.3 Limits of exponential functions. 6.4 Limits of logarithmic functions.

6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY):

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Revision	02	0	0	0	0
2	Determinants and Matrices	12	04	08	12	24
3	Partial Fractions	06		04	04	08

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
4	Trigonometry	14	04	08	12	24
5	Function	04	02	02	04	08
6	Limits	10	04	04	08	16
	TOTAL	**48**	**14**	**26**	**40**	**80**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED EXERCISES/PRACTICAL/TUTORIAL :

1) The tutorial/practical/exercises should be properly designed and implemented with an attempt to develop different types of cognitive and practical skills so that students are able to acquire the competencies.

2) Form a batch of 20 students and at least 10 problems should be given to get necessary exercise.

Sr. No.	Title/Topic	Exercises/Tutorial	Approx. hours
1	Determinants and Matrices	Solving problems on cramer's rule Examples on Matrix Addition/Subtraction and Product Co-factors, Ad joint and Inverse of Matrix Solution of Simultaneous Equation using 3X3 Matrix and its Applications	02 02 02
2	Partial Fractions	Examples related Definition and cases	02
3	Trigonometry	Practice Examples: Allied & Compound Angles. Examples related inverse trigonometric ratios	04
4	Function	Examples related Definition and Rules.	02
5	Limits	Examples related to different types of function.	02

8. SUGGESTED STUDENT ACTIVITIES :

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9. SPECIAL INSTRUCTIONAL STRATEGIES (if any) :

1 Chalk-board method.
2 Projector method.
3 Tutorial method.

10. SUGGESTED LEARNING RESOURCES :

Sr. No.	Title of Book	Author	Publication
1	Mathematics for polytechnic students for first year	S.P:Deshpande	Pune vidhyarti gruh prakshan Pune
2	Mathematics for polytechnic students for first year	G.V.Kumbhojkar	Phadke prakashan Kholapur
3	Mathematics for polytechnics	TTTI Bhopal	TTTI Bhopal

11. Major Equipment/ Instrument with Broad Specifications :

Sr.NO.	Name of the Equipment	Specification
	NA	

12. Software/Learning Websites :

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13. POs and PSOs assignment and its strength of assignment with each CO of the Course :

CO NO.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PS01	PSO2	PSO3
CO1	To able the basic concept of Logarithms and Determinant of order 2 and 3	1	1	-	-	-	-	-	-	-	-	-	-	-
CO2	Students will be able to Solve simultaneous equations using concepts of Determinants and Matrices	3	1	1	-	-	-	-	-	-	-	-	-	-
CO3	Students will be able to solve simple problems Using concepts of Partial Fractions	1	1	1	-	-	-	-	-	-	-	-	-	-
CO4	Students will be able to Solve simple problems by applying using concepts of trigonometry.	3	2	1	-	-	-	-	-	-	-	-	-	-
	Students will be able to Solve the	1	1	-	-	-	-	-	-	-	-	-	-	-

CO5	problem of function using the concept of Function													
CO6	Students will be able to Solve the problem of function using the concept of Limits	1	3	-	-	-	-	-	-	-	-	-	-	-

COURSE CURRICULUM DEVELOPMENT COMMITTEE :

Sr. No	Name of the faculty member	Designation and Institute
1	Mr. M.A. Ali	Lecturer in Mathematics, Government Polytechnic Aurangabad
2	Mr. R.B. Borulkar	Lecturer in Mathematics, Government Polytechnic Aurangabad
3	Mrs. H.H. Bhumkar	Lecturer in Mathematics, Government Polytechnic Aurangabad

Member Secretary PBOS Chairman PBOS Co-coordinator science and Humanities

GOVERNMENT POLYTECHNIC AURANGABAD

COURSE TITLE **ENGINEERING PHYSICS**
COURSE CODE **6G103**

Diploma Programmes in which this course is offered	Semester in which offered
ME/CE/ET/EE/CO/IT/AE	First/Second Semester

1. RATIONALE :

Engineering Physics represents foundation level of courses. It is considered as the mother of all engineering programmes. The principles, laws, hypothesis, concepts, ideas which are acquired by students through this course help in reinforcing the knowledge of technology and solving engineering problems.

2. COMPETENCIES :

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies...

I. Apply facts, concepts and principles of Physics for solving various Engineering Problems
II. Observe, describe, interpret and interact with physical and engineering world through concepts and principles of physics.

3. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE	PA	150
3	0	2	5	80~	20~	25@	25	
Exam Duration				2 Hrs.	1 Hr.	2 Hrs.		

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMES:

Students will able to

1. Determine relevant physical properties of a given material.
2. Analyze thermal, optical and acoustical system using properties of heat, light and sound.
3. Apply fundamentals electrical laws.
4. Select different type of semiconductors, x-ray and optical fibre application.

5. COURSE DETAILS :

Unit	Major Learning Outcomes	Topics and Sub-topics
UNIT-I Genral Propertis of Matter	1a. Measure Strength parameter. 1b. Measure automization and lubricity of given liquid.	**Elasticity:** 1.1 Definitions of deforming force, restoring force, elasticity, plasticity, Factors affecting elasticity. 1.2 Stress Tensile, Compressive, Volumetric and Shear stress, Strain: Tensile, Volumetric and Shear strain. 1.3 Elastic limit, Hooke's law. Elastic co-efficient- Young's modulus, bulk modulus, modulus of rigidity and relation between them **Viscosity** 1.4 Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit. 1.5 Streamline and turbulent flow with examples, critical velocity, Reynold's number and its significance. **Surface tension** 1.6 Cohesive and adhesive force, Laplace's molecular theory of surface tension, Surface Tension: definition and unit, 1.7 effect of temperature and impurity on surface tension. Angle of contact, Capillarity and examples of capillary action 1.8 derivation of expression for surface tension by capillary rise method, applications of surface tension.

UNIT-II Heat Light And Sound	2a. Analyze thermal system. 2b. Analyze optical system. 2c. Analyze acoustic system.	**Heat** : 2.1 Three modes of transistor of heat , conduction convection Radiation , law of thermal conductivity 2.2 Coefficient of thermal conductivity , , expansion of solid and coefficient of linear , aerial and cubical expansion & relation between them **LIGHT** : 2.3 Introduction to reflection and refraction of light, Snell's Law, 2.4 Dispersion. Total internal reflection of light. Critical angle, Simple problems. **Properties of sound** : 2.5 Wave motion transverse & longitudinal wave 2.6 Free & forced vibration , Resonance formula calculate velocity of sound by resonance tube method
UNIT-III Electrostatics And Current Electricity	3a.Analyze electrical system.	3.1 Electric charge, Coulomb's Law of Charges, Unit charge, field, intensity of electric field, electric lines of forces (Properties) Electric Flux, Flux Density. 3.2 Concept of resistance, Specific resistance, Whetstone's network, meter bridge, balancing condition of meter bridge, measurement of unknown resistance using meter bridge. Problems. 3.3 Potential , Potential drop along the length of wire, Principle of Potentiometer, Potential gradient, E.M.F. Unit, Comparison of EMF using potentiometer

UNIT-IV Modern Physics	4a. Use modern materials 4b. Use X-ray	Semiconductor – 4.1 Classification of solids on the basis of band theory: forbidden energy gap, conductor, insulator semiconductor 4.2 intrinsic, extrinsic, semiconductor doping , P and n type semiconductor electrical conduction through p and n semiconductor .P-N junction diode semiconductor metal and insulator. 4.3 Optical fibre: principle, structure of optical fibre, propagation of light wave through optical fibre, derivation of numerical aperture and acceptance angle **X-rays:** 4.4 Origin of X-rays, production of X-rays using Coolidge's X-ray tube 4.5 Minimum wavelength of X-ray derivation, properties of X-rays, applications of X- rays: engineering, medical and scientific

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY) :

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
1	GENERAL PROPERTIES OF MATTER	12	6	7	7	20
2	HEAT LIGHT AND SOUND	12	6	7	7	20
3	ELECTRICITY	12	6	7	7	20
4	MODERN PHYSICS	12	6	7	7	20
	TOTAL	48	24	28	28	80

Legends:
R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

7. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS :

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

Sr. No.	Unit No.	Experiment /Practical Exercises	Approximate Hours
1	1	Know your Physics Laboratory and use of scientific calculator & interpretation of graph.	2
2	2	Measure the dimensions of given objects using vernier caliper.	2

3	3	Determine Young's modulus of elasticity of metal wire by using Searle's apparatus	2
4	4	Measurement of unknown temperature using platinum resistance thermometer.	2
5	5	To determine critical angle using glass block	2
6	6	Determine coefficient of viscosity of given liquid using Stoke's Method	2
7	7	To determine specific resistance of given wire using Ohm's Law	2
8	8	To verify the Law of Resistance in series by Meter bridge.	2
9	9	To study the forward characteristics of P-N junction diode	2
10	10	To understand the concept of resonance and determine the velocity of sound in air.	2
11	11	Comparison of EMF of two cells using Potentiometer	2
Micro Project (Any one of following will be opted by a group of 5-6 students)			
1	Survey of different diodes, resistances and capacitance		
2	Prepare current and voltage rating of home appliances		
3	To make the telescope using lenses		
4	Analyse the different toys and watch on the basis of property of Elasticity		
5	Analyse the different liquidator on the basis of property of surface tension		
6	To collect the information from internet regarding distribution of sound at Gowalkonda fort		
7	To collect the information from internet regarding distribution of sound at Golghumut at Vaijapur		

8. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES :

Following is the list of proposed student activities

a. Calculate acoustics of given class room.
b. Prepare a chart of applications of optical fibre in different fields.
c. Demonstrate different types of capacitors.
d. Seminar by student on any relevant topic.

9. SPECIAL INSTRUCTIONAL STRATEGIES :

a. Search various sites to teach various topics/sub topics.
b. Instead of the traditional lecture method, use different types of teaching methods such as improved lecture method, question answer method, laboratory method to attained specific outcome.
c. Some topics are relatively simpler in nature is to be given to the students for self-learning by seminar or by classroom presentations
d. Teachers provide theme to create multiple choice questions.
e. Provide super visionary assistance for completion of micro-projects.

Hours distribution for Physics Experiments :

Sr. No.	Description	Hours
1	An introduction to Physics laboratory and its experiments (for the set of first four experiments)	02
2	Set of first four experiments	08
3	An introduction to experiments (for the set of next four experiments)	02
4	Set of next four experiments	08
5	An introduction to experiments (for the set of next three experiments)	02
6	Set of next three experiments	06

10. SUGGESTED LEARNING RESOURCES LIST OF BOOKS :

Sr No.	Title of Books	Author	Publication
1	Basic Science Physics	Pawar and Sutar	Nirali Publication
2	Applied Physics	B.G. Bhandarkar	Vrunda Publication
3	Engineering Physics	R.K. Gupta and S.L Gupta	Dhanpat Rai Publication
4	Applied Physics	Pawar, Umrani and Joshi	Nirali Publication
5	Basic Physics	B.G. Bhandarkar, S.N. Jumde	Vrunda Publication
6	Physics Text Book Part -1 for Class - 12	NCERT	NCERT; 2014 edition **ISBN-13:** 978-8174506313
7	Physics Text Book Part -2 for Class - 12	NCERT	NCERT; 2014 edition **ISBN-13:** 978-8174506719
8	A text book of applied physics		S Chand Publication

11. List of Major Equipment/ Instrument :

1. Platinum resistance thermometer
2. Thermocouple
3. Meter bridge
4. Potentiometer

12. E-learning resources :

1. www.physicsclassroom.com for unit II and unit III
2. www.fearofphysics.com for unit III
3. www.sciencejoywagon.com/physicszone for unit III and IV
4. www.science howstuffworks.com
5. https://phet.colorado.edu/en/simulations/category/physics for unit I, II, III and IV

13. POs and PSOs assignment and its strength of assignment with each CO of the Course:

CO. NO.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	Student will able to calculate young's modulus ,surface tension and viscosity of different material	3	3	3	2	-	1	-	-	-	2	-	-	-
CO2	Student will able to demonstrate different properties of heat ,light and sound	3	3	2	2	-	2	-	-	-	1	-	-	-
CO3	Student will able to demonstrate different laws of electric field, charge resistance and capacitance	3	3	3	3	-	2	1	-	-	1	-	-	-
CO4	Student will able to demonstrate different type of semiconductors, x-ray and optical fiber knowledge and application	3	3	3	3	-	3	-	-	-	-	-	-	-

Course Curriculum Design Committee

Sr. No	Name of the faculty member	Designation and Institute
1	Mr. V.S Deshmukh	Lecturer in Physics, Government Polytechnic Aurangabad
2	Mrs. S.B.Kale	Lecturer in Physics, Government Polytechnic Aurangabad
3	Mrs. Z.F.Siddiqui	Lecturer in Physics, Government Polytechnic Aurangabad

Member Secretary PBOS Chairman PBOS Co-coordinator science and Humanities

GOVERNMENT POLYTECHNIC शासकीय तंत्रनिकेतन औरंगाबाद AURANGABAD

COURSETITLE : ENGINEERING GRAPHICS.

COURSE CODE : 6G201

DIPLOMA PROGRAMME IN WHICH THIS COURSE IS OFFERED	SEMESTER
ME, CE, EE, E&TC, AE	First

1. RATIONALE :

Engineering Drawing is the language of engineers and technicians. Always the engineers come across different types of drawings. It is therefore very important to understand the fundamentals and basic concepts involved in drawing.

It describes the scientific facts, concepts, principles and techniques of drawings in any engineering field to express the ideas, conveying the instructions, which are used to carry out jobs in engineering fields. The course aim for building foundation for the further course in drawing and other allied subjects.

It covers knowledge & application of drawing instruments & also familiarizes the learner about Bureau of Indian standards. The curriculum aims at developing the ability to draw and read various drawings, curves and projections.

2. COMPETENCY :

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies:

"Prepare engineering drawings manually with given geometrical dimensions using prevailing drawing standards and drafting instruments."

"Draw orthographic views and isometric views."

3. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE (PR)	PA	
2	--	2	4	--	--	50@	50	100
Exam duration						02 hrs		

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMEs (COs) :

1. Draw geometrical figures and scales.
2. Drawing of various engineering curves.
3. Draw orthographic views of given component.
4. Draw isometric view of given component.
5. Use various drawing codes, conventions and symbols as per IS SP-46 in engineering drawing.

5. COURSE DETAILS :

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics (Containing POs and PSOs assignment in each Sub-topic)
Unit – I **Introduction**	1 Use drawing equipments and instruments effectively. 2 Draw and prepare simple drawings. 3 Follow and apply standard practice as per bureau of I.S. for planning and layout. 4 Choose appropriate scale factor for the drawing.	1.1 Drawing Instruments and their uses 1.2 Letters and numbers (single stroke vertical) for main title, sub-title and normal use. 1.3 Different types of lines, Convention of lines and their applications. 1.4 Scale (reduced, enlarged & full size), Plain scale and Diagonal scale. 1.5 Sheet sizes and layout, Geometrical Constructions. 1.6 Dimensioning, its methods, parallel and chain dimensioning, radius and diameter dimensioning, leader and its use, dimension with text.
Unit – II **Simple Drawing Practices**	1 Select line types and divide given line, circle into equal number of parts. 2 Draw different regular polygons and circle.	2.1 Drawing of different circles with thin, thick, center line use, dividing circle into number of equal parts, dividing line into equal parts. 2.2 Drawing pentagon, hexagon and rhombus, drawing correct arrows to dimension lines, drawing tangent to circle from given point
Unit – III **Engineering Curves**	1 Draw engineering curves with proficiency and speed as per given dimensions. 2 Draw curves with uniform thickness and darkness, dimensioning as	3.1 To draw ellipse by – • Arcs of circle method • Concentric circle method • Oblong method 3.2 To draw parabola by – • Directrix focus method

	per IS.	• Rectangle method 3.3 To draw hyperbola by – • Transverse axis & focus method. • Passing through a given point. (Rectangular hyperbola) 3.4 To draw involute of square, pentagon hexagon and circle. 3.5 To draw cycloid, epicycloid, hypocycloid.
Unit – IV **Orthographic Projections**	1Draw the orthographic views of object 2 Interpret given orthographic views and imagine the actual shape of the component.	4.1 Converting pictorial view into orthographic views. (pictorial view of components with holes, cylinders, ribs, plates, slots) 4.2 Sectional orthographic projection of simple objects. (Use First angle method of Projection).
Unit – V **Isometric Projections**	1 Draw isometric view of given object. 2 Draw isometric scale.	5.1 Isometric projection of simple objects 5.2 Isometric projection of objects having circular holes, slots on sloping surface.

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS :
(End semester examination)

Unit	Unit Title	Teaching Hours	Distribution of practical examination marks			
			R Level	U Level	A Level	Total Marks
I	Introduction	4	2	2	2	6
II	Simple Drawing Practices	4	2	2	2	6
III	Engineering Curves	8	4	4	6	14
IV	Orthographic Projections	8	2	4	8	14
V	Isometric Projections	8	2	4	4	10
	Total	**32**	**12**	**16**	**22**	**50**

Legends: R = Remembrance; U = Understanding; A = Application and above levels

7. LIST OF EXERCISES/PRACTICALS :

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/ programme outcomes.
A3 size sketch book should be used by the students. It is necessary to draw all the sheet problems in sketch book first and then redrawn on the sheets

S. No.	Unit Number	Practical Exercises	Hrs. required
1	I	1. Drawing of lines of different types, lettering and numbers. 2. Drawing of plain and diagonal scale. 3. Redraw any 2D drawing with circles, slots and curves. Show dimensions on it. (Drawing on sketchbook.)	2 2 2
2	II	1. Drawing of regular pentagon, hexagon with standard procedure. Measure internal and external angles. 2. Divide line, circle, and angles in equal number of parts. (Drawing on sketchbook.)	2
2	III	Sheet 1: Drawing of engineering curves. (3 problems) each on ellipse, parabola and hyperbola. Sheet 2: Drawing of Engineering curves (3 problems) each on scale, involute and cycloid.)	4 4
3	IV	Drawing of Orthographic views from given pictorial view. (Minimum 2 objects on sketchbook) Sheet 3: Drawing orthographic views from pictorial view. (2 objects) Use of first angle method only	4 4
4	V	Drawing of Isometric views of simple Objects. (Minimum 2 objects on sketch book). Sheet 4: Drawing of Isometric views of simple objects (any 2 objects).	4 4
		Total	32

Notes:
a: Use one side of sheet.
b: Theory & practice should be in first angle projections and IS codes should be followed wherever applicable.

c: The dimensions of line, distances, angle, side of polygon, diameter, etc. may be different for different batches.

d: The sketchbook has to contain data of all problems, solutions of all problems and student activities performed. Students activities are compulsory to be performed.

e: A hand out containing applicable standards from IS codes including title block as per IS standard should be given to each student by concerned teacher.

f: For ESE Practical examination, students are to be assessed for competencies achieved. Students are to be given data for practical ESE to prepare drawings.

g: At the end of term practical examination of 50 marks of 2 Hours duration is compulsory to all students. External and Internal Examiners should set and assess the Question paper jointly as per following guidelines

- Engineering curves and geometric construction (three problems) 24 marks
- Simple Orthographic projection (One Problem) 16 marks
- Isometric projection with slots and holes (One Problem) 10 marks

8. LIST OF STUDENT ACTIVITIES :

Sr. No.	Activities
1	Sketch the combinations of set squares to draw angles in step of 15 degrees. (15^0 , 30^0, 45^0, 60^0 , 75^0 , 90^0 , 105^0 , 120^0 , 135^0 , 150^0 , 165^0 , 180^0).
2	List the shapes you are observing around you in real life with place/item. (For ellipse, parabola and hyperbola).
3	Draw free hand isometric and orthographic views of any components
4	Observe and draw the locus/path of a point on circumference of a rolling wheel.
5	Prepare cuttings of circle and polygons using cardboard/drawing sheet.

9. SPECIAL INSTRUCTIONAL STRATEGIES :

Sr. no.	Unit no	Unit name	Strategy
1	I	**Introduction**	Conventional black board method, Use of models. Use of software.
2	II	**Simple Drawing Practices**	Conventional black board method, Use of models.
3	III	**Engineering Curves**	Planes made of sheet, cardboard.
4	IV	**Orthographic Projections**	Models, Use of software.
5	V	**Isometric Projections**	Models and cut section.

10. LEARNING RESOURCES:

S.N.	Title of Book	Author and Publication
1	Elementary Engineering Drawing	N.D.Bhatt , Charotar Publishing House
2	Engineering Drawing	Mali , Chaudhari, Vrinda Publication
3	Engineering Drawing	Sidheswar Shastri , Tata McGraw Hill
4	Engineering Graphics	Arunodaykumar, Techmax publications, Pune
5	Engineering Drawing for schools and colleges	IS CODE SP- 46

11. LIST OF MAJOR EQUIPMENT/ INSTRUMENT WITH BROAD SPECIFICATIONS :

S.N.	Major equipment/ Instrument with Broad Specification	Quantity
1	Models- full and cut. (wooden and acrylic)	12
2	Drawing equipments and instruments for class room teaching-large size.	1
3	Drawing board-half imperial size.	100
4	T-square or drafter (Drafting Machine).	1

12. MAJOR EQUIPMENT/ INSTRUMENT WITH BROAD SPECIFICATIONS :

Sr. No.	Name of the Equipment	Specification
1	Various models of standard solids such as pyramid, prism, cone, cylinder etc.	
2.	Different objects or machine elements.	

13. E-LEARNING RECOURSES :

List of Software/Learning Websites.

- http://www.slideshare.net/sahilsahil992/conic-section-1819818
- http://www.technologystudent.com/designpro/drawdex.htm
- http://www.engineeringdrawing.org/engg_curves/problem-3-8-engineering-curves/490/
- http://web.iitd.ac.in/~hirani/mel110-part3.pdf
- http://www.studyvilla.com/ed.aspx
- http://www.youtube.com/watch?v=a703_xNeDao
- E-learning package from KOROS.
- E-learning package from Cognifront

POs and PSOs assignment and its strength of assignment with each CO of the course.

CO. NO.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	No. of hours allocated in curriculum
CO1	Draw geometrical figures and scales.	3	3	2	3	-	-	-	-	3	2	2	2	3	6
CO2	Drawing of various engineering curves.	3	3	2	3	-	-	-	-	3	2	2	2	3	8
CO3	Draw orthographic views of given components.	3	3	2	3	-	-	-	-	3	2	2	2	3	8
CO4	Draw isometric views of given component.	3	3	2	3	-	-	-	-	3	2	2	-	3	8
CO5	Use various drawing codes, conventions and symbols as per IS SP-46 in engineering drawing.	3	3	2	3	-	-	-	-	3	2	2	-	3	2

Name and Designation of Course Designer :

1 Prof. Aher S M

2 Prof. Dhirbassi G D

HOD

CDIC coordinator

GOVERNMENT POLYTECHNIC AURANGABAD

COURSE TITLE : BASICS OF COMPUTER SYSTEM
COURSE CODE : 6G203

PROGRAMME & SEMESTER

Diploma Programme in which this course is offered	Semester in which offered
Common to all branches (CE/ME/EE/ET/CO/IT/AE/DDGM)	FIRST SEMESTER

1. RATIONALE :

This course pertains to basic technology level. It aims to developing fundamentals of Computer and its Applications in students of various programs. This will enable students in using application software's such as word processor, spreadsheets, and power point presentations in their professional fields. Further it will enable students to be lifelong learner.

2. COMPETENCY :

"Use of computer and software application proficiently".

3. TEACHING AND EXAMNATION SCHEME :

Teaching Scheme (Hours/ Credits)			Total Credits (L+T+P)	Examination Scheme (Marks)				
				Theory		Practical		Total
L	T	P	C	ESE	PT	ESE (PR)	PA (TW)	50
--	--	2	2	--	--	25@	25	
Duration of the Examination (Hrs)				--	--	--	--	

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMES :

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

1. Connect and operationalize computer system with its peripheral devices.
2. Create and Format documents in Microsoft Word.
3. Create spreadsheets in Microsoft Excel by using formulae.
4. Create and edit basic power point presentations in Microsoft PowerPoint.
5. Use internet for creating email-id, receive and send email with attachment & search information on internet.

6G203 GPA BASICS OF COMPUTER SYSTEM

5. DETAILED COURSE CONTENTS :

Unit	Major Learning Outcomes (Cognitive Domain Only)	Topics And Sub-Topics
Unit- I Basics of Computer System	1a.Describe computer hardware and software 1b.Identify & use of I/O devices 1c. Describe functioning of CU ALU and memory unit 1d Differentiate various types of printers 1e. Explain use of OS 1f. Demonstrate various file handling operations	1.1 Concept of Hardware and Software 1.2 Computer block diagram and its component like CPU, Control Unit, Arithmetic logic Unit (ALU) & Memory Unit 1.3 Input Output Devices: Keyboard, Mouse, Scanner, Monitor, Printers: Dot matrix, Laser, Inkjet, Plotters. 1.4 System software and Application Software 1.5 Operating system concepts, purpose and functions 1.6 Operations of Windows OS. 1.7 Creating and naming of file and folders 1.8 Copying file, renaming and deleting of files and folders, 1.9 Searching files and folders, installation application, creating shortcut of application on the desktop 1.10 Overview of control Panel, Taskbar.
Unit-2 Word Processor	2a. Create, edit and save word document using basic text formatting features, page setup options & print options. 2b.Apply spell check & grammatical check in the created document. 2c. Insert graphics/clipart/ smart art/shapes/charts in the document. 2d. Create tables, insert, delete rows and columns and apply different table properties.	2.1 Overview of Word processor 2.2 Basics of Font type, size, colour 2.3 Effects like Bold, italic , underline, Subscript and superscript, 2.4 Case changing options, 2.5 Inserting, deleting, undo and redo, Copy and Moving (cutting) text within a document, 2.6 Formatting Paragraphs and Lists 2.7 Setting line spacing; single, multiple 2.8 Page settings and margins including header and footer 2.9 Spelling and Grammatical checks 2.10 Table and its options, Inserting rows or columns, merging and splitting cells. 2.11 Insert Picture, Clipart, shapes, smart art & charts. 2.12 Working with pictures, Inserting Pictures from Files, Wrapping it with image. 2.13 Finding & replacing text. 2.14 Using Drawings and WordArt; Lines

Unit	Major Learning Outcomes (Cognitive Domain Only)	Topics And Sub-Topics
		and Shapes, Modifying Drawn Objects. 2.15 Printing: print preview, select printer & appropriate print options.
Unit- 3 Excel (Spreadsheets)	3a. Create, open, save and print worksheet with page setup and print options. 3b. Enter data and insert, delete and format cells, rows and columns. Use formula and functions 3c. Insert formulas, functions and named ranges in worksheet. 3d. Create chart of different types.	3.1 Introduction to Excel, 3.2 Introduction to data, Cell address, Excel Data Types, Concept of hyperlink 3.3 Introduction to formatting number, text and date. 3.4 Concept of worksheet and workbook. 3.5 Understanding formulas, Operators in Excel, Operators Precedence, Understanding Functions, Common Excel Functions such as sum, average, min, max, date, sqrt, power, upper, lower, count, countif, roundup, sin, cos. 3.6 Introduction to charts, overview of different types of charts available with Excel. 3.7 Hide, unhide rows and columns. 3.8 Concept of print area, margins, header, footer and other page setup options.
Unit- 4 Power Point Presentation	4a. Create a simple text slide using formatting, selecting a slide layout and insert pictures & backgrounds. 4b.Use different design templates for creating slides. 4c. Apply slide transitions and slide timings and animation effect for slide show. 4d. Insert hyperlink in the created slides.	4.1 Outline of an effective presentations 4.2 Starting a New Presentation Files, Saving work, 4.3 Creating new Slides, Working with textboxes. 4.4 Changing a slides Layout, Applying a theme, Changing Colours, fonts and effects, Creating and managing custom Colour & font theme, Changing the background. 4.5 Use of design template and auto content wizard. 4.6 Apply animation and transition to slides with timing effect. 4.7 Slideshow: from beginning slideshow, from current slideshow, custom slideshow. 4.8 Creating hyperlinks, Using action buttons
Unit- 5 Introduction to	5a. Know different terms related to internet and browsers. 5b. Understand need & duty of	5.1 What is the Internet? 5.2 Web pages, Home Pages. 5.3 Use of web sites

Unit	Major Learning Outcomes (Cognitive Domain Only)	Topics And Sub-Topics
Internet	ISP & List out different ISP in city. 5c. Use internet for searching information and create, receive & send email with attachment.	5.4 ISP: need & duties of ISP, different ISP in city 5.5 Browsers 5.6 Universal resource locators (URL) 5.7 Browsing or surfing the web 5.8 Search engines 5.9 E-mail and Creation of E-mail ID. Sending & Receiving email with attachment. 5.10 Chatting & Video Conferencing tools: Skype and GTalk 5.11 Applications of the Internet

6. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN :

Unit No	Title Of Unit	Practical Hours	Distribution Of Theory Marks			
			R level	U Level	A Level	TOTAL
1	Basics of Computer System	08				NA
2	Word Processing	08				NA
3	Spreadsheet	06				NA
4	Presentation	06				NA
5	Introduction to Internet	04				NA

Legends: *R – Remember, U – Understand, A – Apply and above (Bloom's revised Taxonomy)*

7. LIST OF PRACTICAL / LABORATORY EXPERIENCES/ TUTORIALS :

Sr. No.	Unit	Title Practical/ Lab. Work/ Assignments/ Tutorials	Hours
1	1	Connect the peripherals to a computer system. Get the information about the manufacturers and prices of various components of a PC and laptop.	2
2	1	Start and shutdown of windows, starting different applications. Use of accessories like calculator, paint, notepad & WordPad, Use of system tools like Disk Cleaner, Disk defragmenter, System Information, System Restore & Control panel.	4
3	1	Perform file management operations such as copying, deleting, renaming, creating folders, renaming folders using My computer, Windows Explorer, searching files and folders.	2

4	1	Change windows format such as wall paper, date &time, installing printer, installing and removing programs by using add/remove programs.	2
5	2	Prepare a sample doc files such as resume, application, time table etc. using all word processor tools from menu bar.	6
6	3	Prepare sample spreadsheets such as sample result sheet, salary sheet of employees using all MS-Excel tools from menu bar. (applying excel formulae/functions)	6
7	4	Prepare sample power point presentation by applying MS-Power Point tools such as design template, background, transition and animation effect to slides.	6
8	5	Search information on internet .Use Internet to create email account, send email with attachment, receive email and management of email account.	2
9	5	Use of E-commerce sites, Mobile apps for various online transactions.	2
			32

8. SUGGESTED STUDENTS ACTIVITIES :

Following is the list of proposed student activities like: assignments based on MS-Office, teacher guided self learning activities and lab based mini-projects on MS-Word, MS-Excel and MS-PowerPoint. These could be individual or group-based.

a. Visit institute website.
b. Manage files and folder using Windows.
c. Prepare letter and project report using word processor
d. Create result sheet by inserting student marks and show it in chart form on the same worksheet using Excel spreadsheet.
e. Develop effective presentation of project report using PowerPoint Presentation.
f. Use open source software like openoffice.org (latest version).

9. SUGGESTED SPECIFIC INSTRUCTIONAL STRATERGIES

These are sample strategies, which a teacher can use to facilitate the attainment of course outcomes.

a. Group based.
b. Q & A technique.
c. Individual based.
d. Activity based learning
e. Self Line learning.

10. SUGGESTED LEARNING RESOURCE :

S.No.	Name of Book	Author	Publication
1.	Fundamentals of computers	P.K.Sinha	BPB Publication
2.	Computer course	R.Taxali	TMGH Publication
3.	MS-Office for Dummies	Wallace Wang	Wiley India, New Delhi
4.	Basic Computer Engineering	Dr. Shailendra Singh, Pawan Thakur, Anurag Jain	Satya Prakashan, New Delhi, India.
5.	Microsoft Office	Ron Mansfield	BPB Publication
6.	Fundamentals of computers	P.K.Sinha	BPB Publication

11. LIST OF MAJOR EQUIPMENTS AND MATERIALS REQUIRED :

Sr. No.	Name of equipment	Brief specification
1.	Computer System with latest configuration along with Windows Operating System and latest MS-Office.	Desktop Computer/Personal Computer (Windows OS Prof. Edition/Academic edition) with preloaded operating systems windows 7/windows 8 (academic Lic)
2.	PROJECTOR	Multimedia Projector with wireless connectivity between PC and Projector
3.	PRINTER	HP 1022n laser printer
4.	SCANNER	HP scanner .Color Scan Method: Color, Flatbed, Mirror Moving Scanner Optical Resolution: 800 x 1600 dpi Maximum Scanning Area 304.8 x 431.8 mm (12x17 inch)
5.	Computer System with latest configuration along with Windows Operating System and latest MS-Office.	Desktop Computer/Personal Computer (Windows OS Prof. Edition/Academic edition) with preloaded operating systems windows 7/windows 8 (academic Lic)
6.	PROJECTOR	Multimedia Projector with wireless connectivity between PC and Projector

12. LEARNING WEBSITE & SOFTWARE :

(Please mention complete URL of the E- resource CO wise)

a. https://www.youtube.com/watch?v=cXBVMyKQ3ZY
b. http://www.gcflearnfree.org/computerbasics/
c. http://www.homeandlearn.co.uk/word2007_2010/Word-2007-2010.html
d. http://www.homeandlearn.co.uk/excel2007/Excel2007.html
e. https://support.office.com/

13. MAPPING OF PROGRAMME OUTCOMES (POs) AND PROGRAMME SPECIFIC OUTCOMES (PSOs) WITH COURSE OUTCOMES (COs) :

SNo	Course Outcome	POs										PSOs	
		1	2	3	4	5	6	7	8	9	10	01	02
1	Connect and operationalize computer system with its peripheral devices.	2	2	2	0	0	0	0	0	0	2	0	0
2	Create and Format documents in Microsoft Word.	3	0	3	3	0	0	0	0	0	3	0	0
3	Create spreadsheets in Microsoft Excel by using formulae.	3	0	3	3	0	0	0	0	0	3	0	0
4	Create and edit basic power point presentations in Microsoft PowerPoint.	3	0	3	3	0	0	0	0	0	3	0	0
5	Use internet for creating email-id, receive and send email with attachment & search information on internet.	1	1	1	1	0	0	0	0	0	1	0	0

Course Curriculum Design Committee

Sr No	Name of the faculty members	Designation and Institute
1	R.T.Aghao	Sr.Lecturer in APM Dept. , Govt. Polytechnic, Aurangabad
2	O.R.Varma	Lecturer in IT Dept., Govt. Polytechnic,Aurangabad

GOVERNMENT POLYTECHNIC शासकीय तंत्रनिकेतन AURANGABAD

(Member Secretary PBOS) (Chairman PBOS)

COURSE TITLE **ENGLISH**
COURSE CODE **6G301**

Diploma Programme in which this course is offered	Semester in which offered
Common to all programmes	First

1. RATIONALE :

English language has become a supreme necessity to pick up a solid core of knowledge. It has a power of linking us with the outside world. Competency in English is also important in business matters like transactions including e-mails, memos, reports and contracts in writingnot only for Indian industry, but also worldwide. Students having proficiency in reading, writing and speaking English has become a prospect of employment in the industry. Hence, this course is designed to help the students to communicate in English effectively.

2. COMPETENCY :

At the end of studying this course students will be able to
"Communicate in English language in spoken and written form."

3. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE	PA	
2	-	2	4	80	20	-	25*	125
Exam Duration				3 Hrs	1 Hr	-	-	-

(*): Out of 25 marks, 05 marks -micro-project assessment; 20 marks-progressive assessment.
Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR-Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMES :

1. Interpret the meaning of new words from the text.
2. Formulate grammatically correct sentences using new words.
3. Prepare resume in proper format.
4. Use relevant vocabulary to construct sentences.

5. COURSE DETAILS :

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
UNIT-I Comprehension	1a. Understanding meaning of new words from the text. 1b.Write summary of the text 1c. Responding to the questions from the text 1d. Express ideas and views on learned topics	**Text from the book & Vocabulary Building** 1.1.Man Versus Machine—M..K..Gandhi 1.2. Say No to Plastic Bags 1.3. Interview of Dr.A.P.J.AbdulKalam 1.4. Dare to Dream-N.R.Narayan Murthy 1.5. The History Maker—MaltiHola
UNIT-II Functional Grammar	2a. Apply correct verbs in given sentences 2b. Use of correct structures in writing 2c. Identify different types of sentences 2d. Apply correct auxiliaries 2e. Use appropriate connectors in the given sentences 2f. Use appropriate prepositions in the given sentences 2g. Apply correct and exact rules and structures to transform the sentences 2h. Use of correct punctuations in writing	**Functional Grammar** 2.1.Tenses & Time 2.2. Sentence Patterns 2.3. Types of Sentences 2.4. Modal Auxiliaries 2.5. Connectors 2. 6. Prepositions 2.7. Voice, Degree and Reported Speech 2.8. Punctuation Marks
UNIT-III Craft of writing	3a. Writing a paragraph effectively 3b. Writing e-mail in proper formats 3c. Prepare resume in suitable format	3.1.Paragraph Writing 3.2.E-mail writing 3.3. Resume Writing
UNIT-IV Listening & Speaking Skills	4a. Formulate sentences using new words 4b. Enrich vocabulary through reading and listening 4c. Follow correct pronunciations, intonations & accents in communication	4.1. Importance of effective listening 4.2.Barriers in listening and how to overcome them 4.3Problems in speaking English faced by Indian Students

6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY):

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Text from the book & Vocabulary Building	12	08	12	10	30
II	Functional Grammar	12	05	08	13	26
III	Craft of Writing	06	04	04	08	16
IV	Listening & Speaking Skills	02	02	02	04	08
	Total	**32**	**19**	**26**	**35**	**80**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)
Note: This specification table shall be treated as a general guideline for students and teachers The actual distribution of marks in the question paper may vary slightly from the above table

7. SUGGESTED EXERCISES/PRACTICALS :

The tutorial/practical/exercises should be properly designed and implemented with an attempt to develop different types of cognitive and practical skills **(Outcomes in cognitive, psychomotor and affective domain)** so that students are able to acquire the competencies.

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx. Hrs. required
1.	I	Make Sentences Using Correct Collocations	04
2.	II	Frame Sentences Using Appropriate Preposition/Conjunction	04
3.	III	Make Sentences Using Correct Tenses	04
4.	IV	Make Sentences Using Seven Basic Sentence Patterns	04
5.	V	Transform Sentences in Reported Speech	04
6.	VI	Prepare an Effective Resume in a Proper Format	04
7.	VII	Draft Formal E-mails	04
8.	VIII	Listen a Paragraph/Speech/Story and Make a Summary	04
		Total	**32**

8. SUGGESTED STUDENT ACTIVITIES :

Following is the list of proposed student activities like:

a. Read newspapers daily.
b. Solve exercises on lexical items.
c. Use apps for practice.
d. Use pocket dictionary to increase vocabulary.
e. Listen the news bulletin on radio.
f. Play different word games to improve vocabulary.
g. Write different articles & posts.
h. Practice role-playing.
i. Write a story of own experiences.
j. Practice listening comprehension.
k. Collect articles from newspapers & make a collection.
l. Practice paragraph writing.
m. Collect different business letters.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any) :

a. Arrange different competitions to solve various grammatical items.
b. Motivate students to listen, speak, read and write English in their day-to-day life.
c. Student centered methods and techniques of teaching and learning e.g. group discussion, role-play, individual and group assignments should be used so as to make the students actively participate in the teaching-learning process.

SUGGESTED TITLES FOR MICRO-PROJECTS :

A micro-project is planned to be undertaken by a student. He/she ought to submit it by the end of the semester to develop the industry oriented COs. The micro-project could be industry application-based, internet-based, workshop-based, laboratory-based or field-based. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. A suggestive list is given here. Similar micro-projects could be added by the concerned faculty:

a. The use of English language in the user manual of electronic appliances used at home.
b. Prepare an advertisement for five daily used products using contextual vocabulary.
c. Observe environmental problems in your locality and frame at least ten slogans to createan awareness.
d. Take an interview of any successful person in your locality in context with his life journey, inspiration, social contribution, role model and keys to success.
e. Prepare a leaflet giving information about your institute.
f. Write a review of your favourite movie/drama/novel.
g. Find out the difficulties in speaking English faced by the students from rural areas.

10. SUGGESTED LEARNING RESOURCES :

Sr. No.	Title of Book	Author	Publication
1	English Grammar & Composition	R. C. Jain	Macmillan
2	Business Letters & E-mails	JyotiNandedkar	Saket Pub.
3	Business Correspondence and Report writing	R. C. Sharma & Krishna Mohan	Tata McGraw Hill
4	Contemporary English Grammar	David Green	Macmillan
5	A Communicative Grammar of English	Geofray Leech &Jansvartvik	Pearson Education
6	*Spectrum- A Text Book on English	-	MSBTE
7	* A Text Book on English	-	MSBTE

11. Major Equipments/ Instruments with Broad Specifications

Sr.No.	Name of the Equipment	Specification
1	Digital English Language Laboratory	
2	Computers and Headphones	
3	Magazines, Articles, Journals in Lab.	

12. E-learning resourses

(Please mention complete URL of the E- resourses CO wise)

1	https://www.nptel.ac.in/courses
2	https://www.k12reader.com
3	https://www.eduaction.com
4	https://www.k5learning.com
5	https://www.english4u.com

13. POs and PSOs assignment and its strength of assignment with each CO of the Course

CO NO	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	Interpret the meaning of new words from the text.	3	1	1	1	1	1	1	1	3	1	-	-	-

CO2	Formulate grammatically correct sentences using new words.	3	1	1	1	1	1	1	1	3	1	-	-	-
CO3	Prepare resume in proper format.	1	1	2	1	3	3	2	3	3	3	-	-	-
CO4	Use relevant vocabulary to construct sentences.	1	1	1	1	1	1	1	1	2	1	-	-	-

Sr. No	Name of the faculty member	Designation and Institute
1	Mrs. P.Y. Kamble	Lecturer in English, Government Polytechnic, Aurangabad
2	Mrs. M.S. Ban	Lecturer in English, Government Polytechnic, Aurangabad
3	Mr. P.V. Deshmukh	Lecturer in English, Government Polytechnic, Aurangabad
4	Mr. R.L. Korde	Lecturer in English, Government Polytechnic, Aurangabad
5	Mr. D.D. Gangthade	Lecturer in English, Government Polytechnic, Aurangabad
6	Mr. A.P. Jagtap	Lecturer in English, Government Polytechnic, Osmanabad

Member Secretary PBOS Chairman PBOS Co-coordinator science and Humanities

GOVERNMENT POLYTECHNIC शासकीय तंत्रनिकेतन AURANGABAD

COURSE TITLE : DEVELOPMENT OF LIFE SKILLS

COURSE CODE : 6G303

Diploma Programme in which this course is offered	Semester in which course is offered
CE/ME/ETX/EE/AE/DDGM/CO/IT	FIRST / SECOND

1. RATIONALE :

The generic skills are lifelong skills which need to be developed continuously. These skills are necessary for diploma engineers for their professional career.

This course aims to develop interpersonal skills, problem solving, decision making, Professionalism with etiquettes, ethics and value system.

This course also aims at developing an engineer as a team leader, effective member of the team and to become sound personality. It will develop the abilities and skills to perform at highest degree of quality as an individual.

2. COMPETENCY :

"Develop life skills to enhance personal effectiveness, professionalism and optimal use of resources."

3. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE (OR)	PA	
--	--	2	2	--	--	25@	25	50

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMES (COs) :

1. Develop interpersonal skills.
2. Exhibit corporate etiquettes and professionalism.
3. Enhance personal effectiveness and body language
4. Practice time management and goal setting technique
5. Develop presentation skills.
6. Manage Stress at workplaces

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5 COURSE DETAILS :

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit –I Self Analysis	1a. Identify Strengths and weaknesses of an individual 1b.Identify opportunities, threats in different situations. 1c. Describe principle of Need Base Theory	**Self-Analysis** 1.1 Strength, weaknesses, opportunities and threats 1.2 Techniques of self-control 1.3 Understanding Need base Theory — Attitude, aptitude, assertiveness, self-esteem, Confidence 1.4 Understanding Self
Unit– II Communication Skills& Presentation Skills	2a. Identify techniques of communications. 2b. Describe Body language techniques 2c. Understand the principle Eye contact and facial expression. 2d. Develop appropriate presentation Skills. 2e. Use multimedia tools and technology for effective presentation. 2f. Conduct Group discussion and Interviews.	**Communication Skills& Presentation Skills** 2.1 Techniques of communication skills, 2.2 Body language, Dress like the audience, Posture, Gestures, Eye contact and facial expression. 2.3 Presentation Skill –Stage fright, Voice and language – Volume, Pitch, Inflection, Speed, Pause Pronunciation, Articulation, Language, Practice of speech. 2.4 Group discussion and Interview technique, Use of aids –OHP, LCD projector, white board
Unit III Interpersonal communication and Corporate and Etiquettes	3a. exhibit/apply inter personal skills in different situations. 3b. Practice manners and Etiquettes.	**Interpersonal communication and Corporate and Etiquettes** 3.1 Interpersonal communication Through Self Development and change.

		3.2 Polished personal habits 3.3 Ethics & Etiquettes: a way of life, what are ethics, how ethics help to ensure positive interpersonal relations, 3.4 Personal value system, Personal Attire & Grooming 3.5 Cell phone manners
Unit IV **Time Management and goal setting.**	4a. Understand importance of time management. 4b. Apply time management skills. 4c. Set the goals for career growth.	**Time management and Goal Setting** 4.1 Time management skills in groups for completion of project 4.2 Factors that lead to time loss and how they can be avoided 4.3 Time matrix & urgent versus, Important jobs 4.4 Importance of goal setting 4.5 How to set SMART goals.
Unit V **Health and Stress Management**	4a. Manage health for personal efficiency. 4b. Describe Stress Management, 4c. Use strategies to overcome stress 4d Understand emotions	**Health and Stress Management** 5.1 Importance of health management, 5.2 Relevance of it, 5.3 Tips to maintain good health 5.4 Strategies to overcome stress, understanding importance of good health to avoid stress. 5.5 Stresses in groups, understand and identify emotions, how to control emotions, emotional intelligence.
Unit VI **Problem Solving Techniques and**	6a. participate in technical Quizzes and puzzles.	**Problem Solving Techniques and Creativity** 6.1 definition of problem, types

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Creativity	6b.Use problem solving techniques 6c. Describe factors enhancing creativity	6.2 solving Puzzles and technical quizzes. 6.3 Reducing conflict by preventing problems in the classroom. 6.4 Creativity concept, Tips and ways to increase creativity, importance of creativity.

6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY) :

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Self-Analysis	4	NA	NA	NA	NA
II	Communication Skills & Presentation Skills	6	NA	NA	NA	NA
III	Interpersonal communication and Corporate and Etiquettes	6	NA	NA	NA	NA
IV	Time management and Goal Setting	6	NA	NA	NA	NA
V	Health and Stress Management	6	NA	NA	NA	NA
VI	Problem Solving Techniques and Creativity	4	NA	NA	NA	NA

Legends: R = Remembrance; U= Understanding; A= Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED EXERCISES/PRACTICALS :

The tutorial/practical/exercises should be properly designed and implemented with an attempt to develop different types of cognitive and practical skills **(Outcomes in cognitive, psychomotor and affective domain)** so that students are able to acquire the competencies.

Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of ***Programme Outcomes/Course Outcomes in affective domain*** *as given in a common list at the beginning of curriculum document for this programme. Faculty should refer to that common list and should ensure that students also acquire those Programme Outcomes/Course Outcomes related to affective domain.*

S. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx. Hrs. required
1	I	1) Analyze self with SWOT techniques.	04
2	II	2) Present a topic (related to technical advancement should be given to a group of five to six students. Group should search the necessary information from various sources and prepare a systematic power point presentation. All such presentations should be delivered in front of class by groups. Presentations are to be evaluated by teacher).	04
3	II	3) Deliver extempore (Topic will be given to the individual for a speech of 5 to 8 minutes. Here the individual speeches of students will be conducted and evaluated by group of students.)	04
4	II	4) Participate in Group Discussion (Teacher should form group of six to eight students and give topics for group discussion. Group discussions should be carried out and evaluated by teacher)	04
5	III	5) Exhibit Etiquettes in different situations (Visit to any one place like office/firm/development sites etc. and observe the communication and etiquettes.)	04
6	IV	6) Prepare your individual time table for a week - a) List down your daily activities. b) Decide priorities to be given according to the urgency and importance of the activities. c) Find out your time wasters and mention the corrective measures. d) Set short term and long term goal for PT/TEE/Gymkhana -sport/gathering event etc.	04
7	V	7) Demonstrate simple Yoga postures and other stress relieving techniques by professional persons and narrate his/ her experiences.	04
8	VI	8) Participate in Quizzes, puzzle- solving and educational games and narrate his/her experiences.	04
		Total	**32**

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8. SUGGESTED STUDENT ACTIVITIES :

Following is the list of proposed student activities like:

- Following activities will be undertaken as per their convenience. students are advice to submit their report about participation in activities.
- 1. Case studies to be discussed in a group and presentation of the same by group /group leader.
- Carry out Field exercises and prepare reports. (e.g. interact with supplier/trader and discuss about techno commercial specifications of product)
- Role play by individual/group leader.
- Sharing of self -experiences in a group.
- Brain storming sessions in a group
- Questionnaire -filling & discussing results of the same in a group.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any) :

i. Motivate students to use internet and collect information about various generic skills
ii. Arrange expert lecture on various topics on (two/three) SWOT analysis/Time management/Etiquettes / stress management/health management.etc.

10. SUGGESTED LEARNING RESOURCES :

A) Books

Sr. No.	Title of Book	Author	Publication
1	Pearson Education Asia	Organizational Behavior	Tata McGraw Hill
2	Marshall Cooks	Adams Time management	Viva Books

Sr. No.	Title of Book	Author	Publication
3	Bishop , Sue	Develop Your Assertiveness	Kogan Page India
4	Allen Pease	Body Language	Sudha Publications Pvt. Ltd.
5	Lowe and Phil	Creativity and problem solving	Kogan Page (I) P Ltd
6	You can win	Mr. Shiv Khera	Macmillan ,India Ltd.
7	Wings of Fire	Mr .Abdul Kalam	Universities Press
8	Prabhavi Vyaktimatwa	SEEMA GUPTA	SAKET PUBLICATION
9	Yoga Dipika	Mr. Iyyengar	Rohan prakashan
10	Tan Tanavache Niyojan (Marathi)	Dr. Anand Nadkarni	Majestic Publishing House
11	Tandrust Raha ,Mast Jaga.(Marathi)	Dr. Rajiv Sharangpani	Continental Prakashan

B) Software/Learning Websites:
Websites related to soft skills.

POs and PSOs assignment and its strength of assignment with each CO of the Course

CO. NO.	Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO2
CO1	Develop interpersonal communication				2				2	3			
CO2	Display corporate etiquettes and professionalism		2			2			2				
CO3	Improve personality and body language			2							2		

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CO4	Practice time management and goal setting technique	2		2					2	2			
CO5	Develop presentation and group discussion technique		2		2			2					
CO6	Acquire Stress removing and Problem solving technique		2			2					2		

Course Curriculum Design Committee

Sr No	Name of the faculty members	Designation and Institute
1	Dr.Uday V. Pise	Head of Department , Mechanical Engg. Govt. Polytechnic, Aurangabad
2	Prof. R. T. Aghao	Lecturer in Applied Mechanics., Govt. Polytechnic, Aurangabad

(Member Secretary PBOS) (Chairman PBOS)

GOVERNMENT POLYTECHNIC AURANGABAD

COURSE TITLE : ENVIRONMENTAL SCIENCE
COURSE CODE : 6G304

DIPLOMA PROGRAMME IN WHICH THIS COURSE IS OFFERED	SEMESTER
ME, CE, EE, E&TC, CO, IT, AE	FIRST

1. RATIONALE :

The present plight of the world as a victim to a number of environmental setbacks ranging from global warming, ozone layer depletion, acid rains led to alarmingly increase in world pollution levels. This has led to the dangerous situation threatening existence of biosphere on the earth. Diploma engineers also get confronted with this issue in their professional life.. Diploma engineers need to be aware of environment and associated issues so that he can help in protection and preservation of environment.

2. COMPETENCY :

"Contribute in overall preservation of eco system of organization."

3. TEACHING AND EXAMINATION SCHEME :

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PT	ESE (PR)	PA	
0	--	2	2	--	--		50	50
Exam duration			--	--	--	--	--	

Legends : **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice ; **P**- Practical; **C**- Credits; **ESE**- End Semester Examination; **PT** – Progressive Test, **PA**- Progressive Assessment, PR- Practical Examination, OR – Oral Examination, TW - Term Work, # External, @ Internal examination , ~ Online Examination.

4. COURSE OUTCOMES :
At the end of this course, students would be able to -

1. Identify elements of biodiversity.
2. Assess the impact of biodiversity
3. Apply provisions of various environmental protection acts in practice.
4. Undertake survey on environmental concerns and remedial measures

5. COURSE DETAILS :

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit –I **Environment and studies**	1a. Write genesis of environmental concerns 1b. Identify the various types of environmental issues.	1.1 Definition , Scope and importance of Environmental studies 1.2 Meaning of environment, , Environment and its components, Segments of environment, scientific aspects 1.3 Global environment crisis and factors affecting it Deforestation aquatic life and tsunami effects ,Population, Carbon dioxide emissions, pollution, Extinction of species etc. Ecological Foot print
Unit– II **Environmental Natural Resources**	2a. Classify different resources 2b. Outline issues associated with different resources. 2c. Develop strategies to conserve of natural resources.	2.1. Renewable and Nonrenewable natural resources and associated issues as under, a. Forest resources b. Water resources c. Energy resources d. Land resources e. Food resources f. Energy resources 2.2. Role of individual in conservation of natural resources
Unit– III **Ecosystems**	3a. Outline ecosystem. 3b. Categorize various ecosystems .	3.1 Concept of Ecosystem 3.2 Structure and function of ecosystem 3.3 Structure and functions of following ecosystems, a. Forest Ecosystem b. Grassland Ecosystem c. Desert Ecosystem d. Aquatic ecosystem
Unit– IV **Biodiversity and Conservation**	4a. Outline Biographical classification of India 4b. Assess Biodiversity loss and its impact.	4.1 Introduction, Values of the Biodiversity, Biographical classification of India 4.2 Biodiversity loss and its impact 4.3 Conservation of Biodiversity, Efforts made in India
Unit - V	5a. Describe pollution and its typs	5.1 Definition of pollution and its types

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Environmental Pollution	5b. Describe cause, effect relationship. 5c. Conduct Survey on Environmental Pollution	5.2 Causes, effects and control measures of following types of pollutions a. Air Pollution b. Water Pollution c. Soil Pollution d. Marine Pollution e. Thermal Pollution f. Nuclear hazards and pollution 5.3 Pollution norms, rules and bye laws 5.4 Solid waste management: Causes, Effects and control measures of urban and industrial waste.
Unit – VI **Social Issues and Environment**	6a. Identify social issues related to environment 6b. Suggest control measures to counter the issues,	6.1 Urban problems related to Energy, Measures of water conservation including Rain water harvesting, Watershed Management 6.2 Climatic changes, Global Warming, Acid rain, Ozone layer depletion issue, Nuclear accidents and holocaust. Kyoto Protocol, Climate justice 6.3 Introduction to Environment (protection) act(prevention and control of pollution),Wildlife protection act, Forest protection act Air (Prevention and control of pollution) Act, Water related Environment laws ,issues in enforcement of environmental legislation, public awareness.
Unit – VII **Human population and environment**	7a. Use of ICT in environment and human health areas.	7.1Concepts of Population Growth, Environment and human health, Role of information technology in environment and human health

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6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY) :

Unit	Unit Title	Teaching Hours	Distribution of practical examination marks			
			R Level	U Level	A Level	Total Marks
I	Environment and studies	6	NA	NA	NA	NA
II	Environmental Natural resources	6	NA	NA	NA	NA
III	Ecosystems	6	NA	NA	NA	NA
IV	Biodiversity and conservation	6	NA	NA	NA	NA
V	Environmental Pollution	12	NA	NA	NA	NA
VI	Social issues and environment	6	NA	NA	NA	NA
VII	Human population and environment	6	NA	NA	NA	NA
Total		48	NA	NA	NA	NA

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED EXERCISES/PRACTICALS :

The tutorial/practical/exercises should be properly designed and implemented with an attempt to develop different types of cognitive and practical skills **(Outcomes in cognitive, psychomotor and affective domain)** so that students are able to acquire the competencies.

Here all the practical exercises are to be completed by students in a group. The group size should be 10 to 12. The groups should be formed by concerned teacher in consultation with students Every group should be assigned a group leader. All groups will complete the practical assignments in spare time and during Sundays and holidays. No separate time slots will be allotted to these practical exercises. Teacher will guide and give necessary inputs for modus operand of exercises.

S. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx. Hrs. required
1	I	Prepare report on environmental issues of your institute / Selected Premises	04
2	II	Collect information related to natural resources of India and methods adopted for conservation of these resources	02
3	I, II	Prepare "Energy Audit Report" of a small home. And give suggestions for conservation of energy.	02

4	III, IV	Examine water usage of a small community/locality in city/Apartment /Your Institute and prepare a Report on actions that could be taken to conserve the water fron following point of view: How much water is consumed How much wastage of water occurs How can demand of water be reduced How can ecological footprint of water they get can be reduced What other environment friendly ways of getting water can one implement What is the quality of water and how can it be improved How reuse and recycling of water can be done How users can be educated for proper use of water	02
5	I,II,III, VI	Visit, "Roof water harvesting" system installed in nearby area and prepare a detailed report. Include local bodies legislation as regards roof water harvesting	02
6	I,II,III	Undertake "Tree plantation project" and plant at least 03 trees per student in your Institute. Prepare detailed report on tree plantation.	02
7	I,II,III	Visit ,study and analyze a "Solar systems" installed in nearby area and prepare a detailed report. Include following types of systems, a.Household Solar water heating systems b. Solar P-V Systems c.Solar roof top Net metering systems	02
8	IV	Preparation of Biodiversity Report: Select a small park or garden in your area.Prepare a Biodiversity register: list all the species found in place ,find their scientific names with the help of a botanist. Interview long term users of the place and find out about loss of biodiversity. Write a report describing your observations and your recommendations for conservation of biodiversity.	03
9	V	Prepare a report on water pollution scenario in your institute and make a detailed report. Following activities can be undertaken with permission, Locating and studying water consumption locations in institute like Water coolers , R.O units, Filters, taps. Taking and checking drinking water samples periodically from testing authorities and keeping records. Preparing and executing schedule for cleaning water tanks, water filters, RO units etc.	06
10	V	Prepare report Vehicular pollution checking in your institute: Here sample check the two wheelers, four wheeler vehicles of employees, students with the help of Exhaust gas analyzer / Smokemeter periodically and check the levels of pollution.	02
11	V	Prepare report of Noise and Air pollution levels at a crowded square of city using Deciblemeter and Air sampling device	02
12	VI	Collect information on Global Warming,Acid rain, Ozone layer depletion issue,Nuclear accidents and holocaust. Kyoto Protocol, Climate justice, Environment protection laws and regulations.	02
Total			32

8. SUGGESTED STUDENT ACTIVITIES :

Following is the list of proposed student activities like:

1 Search different journals on Environment
2 Collect info of -Environmental laws and regulations from websites
3 Collect various news paper cuttings on the issues of environment
4 Observe and celebrate following important days on environment,
- 22 April- Earth Day
- 1 – 7 July – Vanamahotsava Week
- 11 International Mountain day
- 2 February –Worlds wetland day
- 5 April – National Maritime day
- 8 June – World Oceans day
- 22 May – international Day of Biological diversity
- 22 March – World Water day.
- 21 March – World Forestry Day
- 16 October –Worlds food day
- 22 September –Car free day
- 29 October-National disaster reduction day
- 21 July – Worlds Population day
- 8 March – Womans day

5 Prepare charts, banners, posters on environment and its protection and display in class, notice boards.
6 Participate in social campaigns concerning environment and its preservation.
7

9. SUGGESTED SPECIFIC INSTRUCTIONAL STRATEGIES :

1. Q & A Techniques.
2. Field Visits
3. Expert Lectures.

10. SUGGESTED LEARNING RESOURCES :

Sr. No.	Title of Book	Author	Publication
1	Environmental Studies	R.Rajgopalan	OXFORD university press
2	Environmental Studies	Anindata Basak	Pearson education
3	Air Pollution	M.N. Rao	Tata Macgrawhill
4	Elements of Environmental Science and Engineering	P. Meenakshi	Prentice Hall
5	Introduction to Environmental Engineering	P.AarneVesilind and Susan Morgan	Thomson

11. Major Equipment/ Instrument with Broad Specifications :

Sr. No.	Major equipment/ Instrument with Broad Specification	Quantity
1	Biological Microscope	01
2	Air sample testing setup	01
3	Water sample testing setup	01
4	Exhaust gas Analyzer	01
5	Smoke meter	01
6	PC with Net connectivity	01
7	LCD Projector	01 et

12. E-learning resources :

(Please mention complete URL of the E- recourse CO wise)

1. www.unep.org
2. www.ipcc.ch
3. www.grida.no
4. www.wildlifeinindia.com
5. www.fsi.nic.in/sfr_2009.htm
6. www.unesco.org
7. www.chilika.com
8. www.foodfirst.org/media/opeds/2000/4-greenrev.html
9. www.cites.org
10. http://projecttiger.nic.in/
11. www.iwmi.cgiar.org/
12. www.worldwater.org
13. www.indiaenergyportal.org
14. http://www.lifeaftertheoilcrash.net/
15. www.mmpindia.org/
16. www.pcri.com
17. http://www.unwater.org/statistics_pollu.html

List of Films

1. The 11th hour
2. The many faces of madness
3. Planet Earth-BBC documentary
4. The childrens of Amazon
5. The Blue Planet-BBC documentary
6. End of Line
7. The State of planet – BBC Documentary
8. The truth about Tigers
9. Bringing home rain- A film by SushamaVeerappa.
10. Drinking the sky – BBC documentary
11. A Crude Awakening :The OIL Crash – A documentary by Basil Gelpke
12. Poison on a platter – Documentary by Mahesh Bhatt
13. The story of bottled water – A documentary by Annie Leonard on packaged water industry.(Download from www.storyofstuff.org)

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13. POs and PSOs assignment and its strength of assignment with each CO of the Course :

CO. NO.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	Analyze and assess the impact of biodiversity and its loss on environment.	2				2	2						
CO2	Identify causes of pollution in working system and apply control measures for prevention.					2	2						
CO3	Apply provisions of various environmental protection acts in practice.	2				3	3			3			
CO4	Appreciate correlation between Human population and its effect on environment.	2				2	2			3			
CO5	Read, analyze and apply various laws and regulations concerning environmental issues.	2				3	3						

Course Curriculum Design Committee

Sr No	Name of the faculty members	Designation and Institute
1	Prof.S.P.Shiralkar	Lecturer in Mechanical Engineering Department
2	Prof. A.B. Deshpande	Lecturer in Mechanical Engineering Department

(Member Secretary PBOS) (Chairman PBOS)