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AICTE, New Delhi

PROSPECTUS
2019-20

GUMLA POLYTECHNIC

ESTABLISHED BY GOVT. OF JHARKHAND

Chandali, Lohardaga Road, Gumla-835 233 (Jharkhand)

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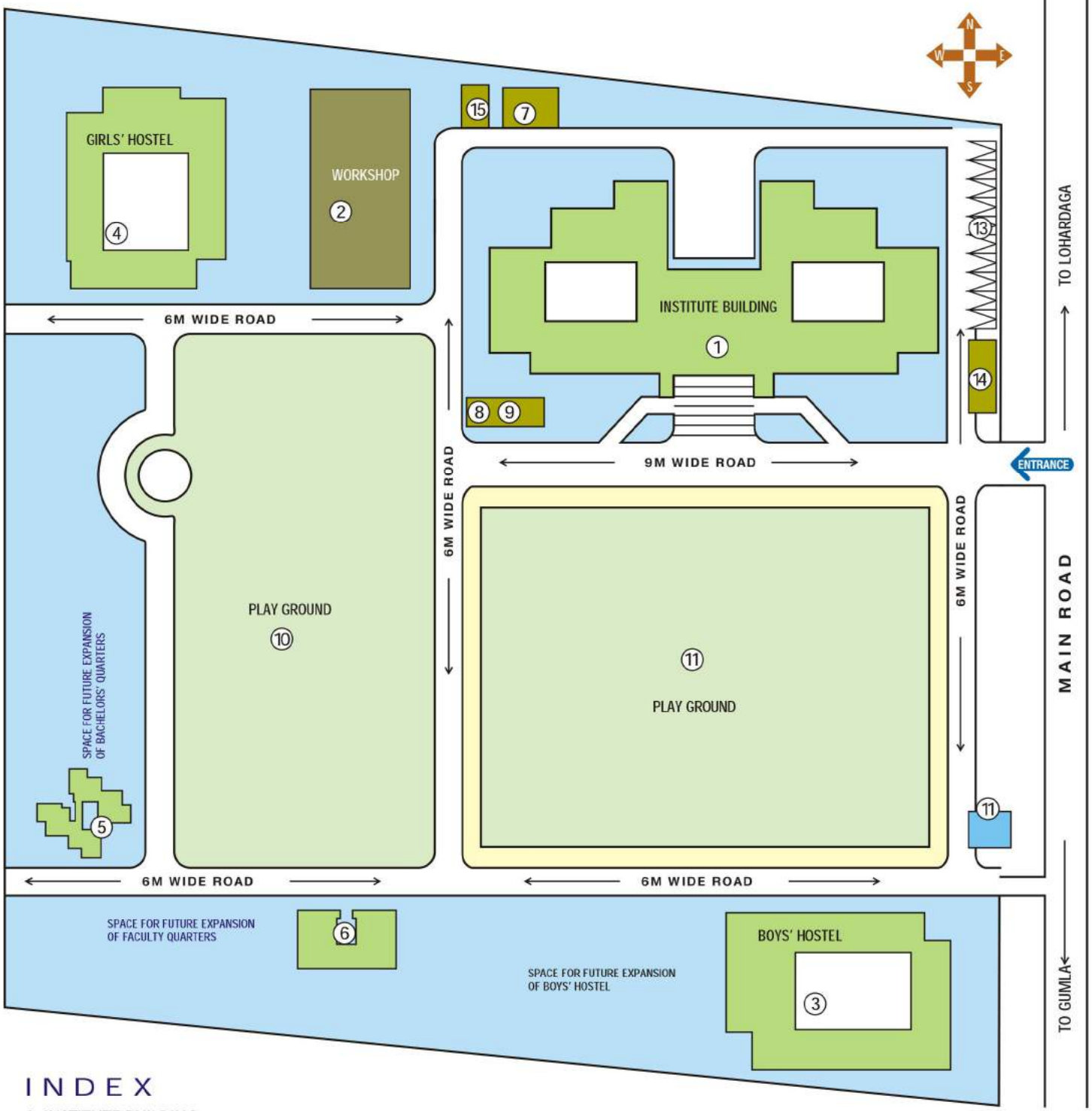
SITE PLAN



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About Ourselves

Dear Student,

Congratulations on taking this step accelerating your career with a Professional course in Diploma Engineering. Choosing the right institution is what matters the most. We assure you that choosing Gumla Polytechnic, Gumla (GPG) will definitely be enriching and rewarding experience for you.

Gumla is comparatively a new district, carved out of Ranchi District on 18th May 1983. The district is blessed with natural beauty. It is blessed with dense forests, hills and rivers. It is situated south-west part of Jharkhand. The main economy of the district depends upon agriculture, forest produces, cattle development, mining activities and miscellaneous other commercial activities.

Gumla Polytechnic—established by Jharkhand Govt.—has newly built, state of art infrastructure, spread over 10 acres and with a built-up area of 2.0 lakh sq.ft. The building includes separate hostels for Boys and Girl's. Gumla Polytechnic will soon develop as a preferred place of learning for engineering aspirants.

Gumla Polytechnic, Gumla is in process of acquiring the affiliation from AICTE, New Delhi, Govt. of India and JUT (Jharkhand University of Technology), Ranchi. Gumla Polytechnic also conforms to all the norms of the regulating authorities to achieve academic and professional excellence.

Initially the GUMLA POLYTECHNIC, GUMLA will offer 60 seats each in:

- Civil Diploma Engineering
- Mechanical Diploma Engineering
- Electrical Diploma Engineering
- Mining Diploma Engineering
- Automobile Diploma Engineering

Total Seats = 300; 240 - JCECEB, 60 - GPCET

Shri Raghubar Das, Hon'ble Chief Minister, Jharkhand presenting the LOI for management of Gumla Polytechnic, Gumla to Shri Abhijit Kumar, Director, Gumla Educational Foundation

To Dear Students

ABHIJIT KUMAR, DIRECTOR

It gives me immense pleasure in welcoming, on behalf of the entire campus community of the GUMLA POLYTECHNIC, GUMLA, Jharkhand. There are huge challenges in today's global and highly competitive markets and we have to ensure that you are ready for them.

The mark of any Institution lies in the quality of values it delivers to the rest of the world. These values must always be solid, professional and positive. That is what you were looking for and that is why you have come to the right place.

So what makes a particular Institution stand out from among the crowd? Top-class faculty and contemporary teaching methods are some of the fundamentals that attract ambitious students like you and ensure that when you complete your education, you earn the most rewarding jobs. This, quite simply, is what we strive to offer at GUMLA POLYTECHNIC, GUMLA. And, that is what sets us apart from the crowd.

We welcome you with an open heart and hope you are going to enjoy the learning here, which will form a base of your fruitful future.

ANITA JHA, DIRECTOR

GUMLA POLYTECHNIC, GUMLA, Jharkhand is established by Govt. of Jharkhand. The institution is being run and managed in PPP mode by Gumla Educational Foundation. It is the aim of the Jharkhand Government to provide facilities for higher learning and research in faculties of sciences, humanity and commerce. GUMLA POLYTECHNIC, GUMLA is a part of this endeavour.

At GUMLA POLYTECHNIC, GUMLA we aim to provide a roboust system of quality learning with latest teaching aids. The pursuit of technological excellence in a highly competitive environment is going to be the benchmark of here. A rich library, well equipped laboratories and experienced faculty will be our strength.

I invite you to experience the invigorating learning environment at GUMLA POLYTECHNIC, GUMLA, where it is our aim to equip our students for a fruitful future. The future is evolving continuously and we wish our students to be prepared to meet it with confidence.

ABOUT GUMLA

Gumla was carved out of Ranchi District on 18th May 1983. Covered by dense forests, hills and rivers. It is situated in the southwest portion of the Jharkhand State and situated at a distance of about 85 km from capital Ranchi. Gumla is located 56.0 KM away from the nearest railway station Bano Railway Station. The nearest airport is Ranchi Airport.

ATTRACTIONS


Anjan

ANJAN: Aanjan is a small village about 18 km away from Gumla. It is believed as the birthplace of Lord Hauman and the place is named after his mother Anjani. An idol of mother Anjani with Hanuman in her lap near Anjani Gufa (cave) can be seen.

NAGAR: A fort of Nagbansi kings is found here. It is said that Chhota Nagpur name of this region is given on the name of the Nagwanshi King as he was selected by the people (younger son = Chhota, Nag - Vansh).

TANGINATH is famous for several reasons. It is an archaeologically important place. It is popularly known as Shivasthali and is famous for great Trishool of rustproof iron. It is situated in Dumri block in Gumla district and about 50kms from Gumla headquarter. The main temple is situated on a hill about 300 feet high. One can see hundreds of Shivlingas placed haphazardly within the campus.


Tanginath

BASUDEOKONA is famous for religious stone idols (Ajanta caves stone idols) and is located in 3 km east from Raidih block headquarter Taraloya.

PANCH PANDAVA PAHAR is situated in Bishunpur block. It is believed that the pandavas had spent some times here during ther Agyatvas.

NAGPHENI is situated in the middle of Gumla & Sisai block. It is famous for the Jagannath temple and there is a big rock in the shape of snake 'Nag'.


Hapamuni

MALMALPUR: The vast mountains and hills of Palkot have kept hidden a number of mysteries in its caves, brooklets, ponds etc. It is situated on NH-23 at about 25 KM from Gumla district headquarter. The caves at Malmalpur and Shitalpur are popular tourist places, cold eevn during summer months.

GOBARSILLI is a rock settled on a pointed top about 200ft.high in Palkot Block. Local people believe that everyone's desire is fulfilled if he can sucessfully thow a pebble across that rock .


Nagar, Gumla

RAKASTONGRI means the hill of demon. As per local believe it is the place where Bali had killed the demon Dundubhi. It is located at the bottom of the Pampapur Mountain.

HAPAMUNI is a famous and ancient village and is situated in Ghaghara block at about 12 km from the block headquarter. The Mahamaya temple, constructed by 22nd king of naga dynasty Gajghat Ray, is the identity of the village. It is believed that Mahaprabhu Chatinya too stayed here on his way to Mathura from Jagannathpuri.


Basudevkona

KAMDARA-AANTOLI is famous for an old temple of lord Shiva. It is 10 km from Kamdara headquarter at Sarita panchayat.

MAHADEOKONA is situated about 2km from Gumla headquarter on Ranchi-Simdega via Khunti road on Tirra Hill. It is told that there was a great temple of Lord Shiva that was constructed before Mahabharata period.

DEWAKI is famous for a shiv-parvati temple. Duringthe month of Sawan a large number of devotees come here to offer water to the Shivalinga. The scenic beauty of the place is also of significance. The Shivalinga ages to medieval era and was dug out in 1967-68.

COURSES BEING OFFERED

CIVIL ENGINEERING

Civil engineering deals with the design, construction and maintenance of the physical infrastructure, including works such as residences, institutional buildings, roads, bridges, canals, dams, airports, sewerage systems, pipelines and railways. A civil engineer is responsible for planning and designing a project, constructing the project to the required scale, and maintenance of the project. A civil engineer requires not only a high standard of engineering knowledge but also supervisory and administrative skills.

ELECTRICAL ENGINEERING

Electrical Engineering deals with the engineering problems, opportunities and needs of electrical, electronics, telecommunication systems and related industries. It provides students with a wide range of fundamental knowledge in core disciplines such as electrical control systems, signal processing, radio frequency design, power generation and electrical machines. It focuses on design and manufacture of electrical devises and their components. Electrical Engineers deal with power generation and transmission systems.

MECHANICAL ENGINEERING

Mechanical engineering is a discipline of engineering that applies the principles of physics and materials science for analysis, design, manufacturing, and maintenance of mechanical systems. It deals with the production and usage of heat and mechanical power for the design, production, and operation of machines and tools. Mechanical engineers manages various engineering products and manage manufacturing plants, industrial equipment and machinery, heating and cooling systems, transport systems, aircraft, watercraft, robotics, medical devices and more.

MINING ENGINEERING

Mining Engineering involves the science, technology and application of extracting and processing minerals from a natural environment. In India, mining engineering courses includes extraction of valuable ores from the ground for processing and utilization. Mining Engineers are responsible for locating natural reserves of minerals, petroleum, and other useful natural resources and lay out the plans, device shafts, inclines or quarries for the safe extraction of these resources from under the earth. The natural resource can be coal, petroleum, metallic or non metallic minerals, etc.

AUTOMOBILE ENGINEERING

Automobile (Automotive) Engineering deals with automotive technology. This course offers specialisation in vehicle designing, repairing, testing and assembling. It deals with the designing, developing, manufacturing, testing & repairing and servicing automobiles such as cars, trucks, motorcycles, scooters etc. & the related sub Engineering systems. For the perfect blend of manufacturing and designing automobiles, Automobile Engineering uses the features of different elements of Engineering such as mechanical, electrical, electronic, software and safety engineering.

SCHEME OF TEACHING AND EXAMINATION : SESSION 2019-20

1st Semester of 3 Years Diploma in Engineering

(All Branches except Non Technical)

Duration of Semester : 14 Weeks • Student Contact Hours : 36 Hrs • Total Marks : 800

Sl. No.	Name of Subject	Subject	Subject Code	Teaching Scheme			Examination Scheme					
				L	T	P	Hours of Exam.	Full Marks of Subject	Final Exam./ Committee Marks	Internal Assessment No.	Pass Marks Final / Ext. Exam.	Pass Marks in Subjects
1.	Communication Skill - I	101	Theory	3			3	100	80	20	26	40
2.	Engineering Math - I	102	Theory	3	1		3	100	80	20	26	40
3.	Engineering Physics - I	103	Theory	3			3	100	80	20	26	40
4.	Engineering Chemistry - I	104	Theory	3			3	100	80	20	26	40
5.	Engineering Graphics - I Th	105	Theory	2			4	50	40	10	13	20
6.	Fundamental of Computer	106	Theory	2			3	50	40	10	13	20
7.	Engineering Physics Lab - I	107	Practical		2	4	50	40	10	13	20	
8.	Engineering Chemistry Lab - I	108	Practical		2	4	50	40	10	13	20	
9.	Engineering Graphics - I SS	109	Sessional			4		50	30	20		25
10	Communication Skill I	110	Sessional			2		50	30	20		25
11.	Fundamental of Computer - I	111	Sessional			2		50	30	20		25
12.	Workshop - I	112	Sessional			4		50	30	20		25
	Total Hours of Teaching per week :			**16**	**1**	**16**						

L (Lecture), **P** (Practical), **T** (Tutorial)

Note: 1. Period of Class hours should be of 1 hour duration as per AICTE norms.

2. Remaining Hrs every week has been marked for students Library and Student Centered Activities.
3. Drawing / Graphics / Practical / Sessional examinations will be held at parent institution.
4. Board will depute examiner for Practical examination.
5. Regarding sessional examination the parent institution will form a three member committee and this committee will examine the sessional records and hold viva of the examinee for 60 % marks allotted to the subject. Marks for remaining 40 % will be provided by the Faculty concerned on the basis of evaluation of each job / work throughout the semester.

Course Name : 03 Years Diploma in Engineering (First Semester)
Subject Title : **Communication Skills-I** • Subject Code : 101

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
03	1	—	100	80	20	26	40	3 Hrs

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: The comprehensive knowledge of communicate ion and communication skill is essential for role of technicians in industry. Diploma pass outs are key persons between workforce and management and they need to be most effective in communication skills. The communication often includes grammar of the language in practice which is these days English. The in house practice before the faculty as part of scheme will develop the abilities in students a practical aspect of effect ive communicat ion. Further exercises have been included for improving oral communication. Practical exposure gives a comprehensive communication skill effectiveness.

OBJECTIVES: 1. Comprehend the given passage.
2. Answer correctly the questions on seen and unseen passages.
3. Increase the vocabulary.
4. Apply rules of grammar for correct writing.

CONTENTS: Theory

Name of the Topic	Hours	Marks
PART I. TEXT • Comprehension - Responding to Questions from text (Spectrum) • Vocabulary - Understanding meaning of new word from text • Identifying part of Speech from text.	10	18
PART II. APPLICATION OF GRAMMAR • Verbs, • Tense • Do as directed (active/passive, Direct/Indirect, affirmative/negative/assertive/ interrogative, question tag, remove too, use of article, preposition, conjunction, punctuation) • Correct the errors from the sentences.	10	18
PART III. PARAGRAPH WRITING • Types of Paragraph (Narrative, Descriptive, Technical) • Unseen passage for Comprehension.	04	08
PART IV. VOCABULARY BUILDING • Synonyms, • Antonyms, • Homophones • Use of Contextual word in a given paragraph	06	12
PART V. SOFT SKILL DEVELOPMENT • Introduction to Group Discussion • Process of Group Discussion • Leadership skill • Instant public speaking	08	16
PART VI. ETIQUETTES & BODY LANGUAGE • Telephone etiquettes listening/speaking • Problems of telephonic Conversation • Verbal/ Oral etiquettes • Physical appearance • Eye Contact/Body Language • Group Discussion	04	08

LIST OF ASSIGNMENTS

1. **Building of Vocabulary** : 25 words from the glossary given at the end of each chapter, to be used to make sentences.
2. **Applied Grammar**: Identify the various parts of speech and insert correct parts of speech in the sentences given by the teachers.
3. **Punctuation**: Punctuation 20 sentences given by the teachers.
4. **Tenses**: List 12 tenses and give two examples for each tense.
5. Dialogue Writing: Write at least two dialogues on different situations. (Conversation between two friends, conversation between two politicians etc.)
6. Identifying the Error: Identify the error in the sentences given by the teachers. (20 Sentences)
7. Idioms and Phrases: Use of Idioms and Phrases in sentences. (20 Examples)
8. Biography: Write a short biography on your favorite role model approximately. (250-300 words with pictures).

ACTIVITIES TO BE CONDUCTED DURING PRACTICALS

1. Student should perform role-plays on the situations given by the teachers. (04 Hours)
2. (e.g. V. Sasikumar & Dhamija 2nd edition (04 Hrs) or Linuga Phon L-21 Multimedia (Desirable)

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Spectrum-A Text Book on English	—	SBTE, Maharastra
02.	Contemporary English Grammar structures and Composition	David Green	Macmillan Publishers
03.	English for Practical Purpose	Z.N. Patil et. el.	Macmillan Publishers
04.	English Grammar and Composition	R.C. Jain	Macmillan Publishers
05.	Grammer & Composition	Nesfield	—
06.	Technical English	—	Longman & Co.
07.	English Workplace Editor	Mukti Sanya	Macmillan Publishers
08.	Thesaurus	Rodgers	Macmillan Publishers
09.	Dictionary Oxford	—	Oxford University
10.	Dictionary	Longman	Oriental Longman

WEBSITES FOR REFERENCE:

1. www. edufind.com
2. www.english_the _the_easy_eay.com
3. www.englishclub.com
4. www.english_grammar_lessons.com
5. www.wikipedia.org/wiki/english_grammar

Course Name : 03 Years Diploma in Engineering (First Semester)

Subject Title : **Engineering Chemistry-I** • Subject Code : 104 / 108

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
03	1	—	100	80	20	26	40	3 Hrs.
Practical	—	2	50	40	10	13	20	4 Hrs.

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: Chemistry is a basic science subject which is essential to all engineering courses. It gives knowledge of engineering materials, their properties, related applications & selection of materials for engineering applications.

Due to technological progress there are hazardous effects on environment & human life.

The core knowledge of environmental effects will bring awareness in students about the precautions & preventions to be taken to reduce the ill effects.

This subject will generate curiosity of carrying out further development in engineering fields.

OBJECTIVES: 1. Draw the orbital configuration of different elements.
2. Represent the formation of molecules schematically.
3. Describe the mechanism of electrolysis.
4. Identify the properties of metals & alloys related to engineering applications.
5. Identify the properties of non metallic materials, related to engineering applications.
6. Compare the effects of pollutants on environments & to suggest preventive measures & safety.

CONTENTS: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Atomic Structure** Definition of Atom, Fundamental Particles of Atom – their Mass, Charge, Location, Definition of Atomic no, Atomic Mass no., Isotopes & Isobars, & their distinction with suitable examples, Bohr's Theory, Definition, Shape of the orbitals & distinction between Orbits & Orbitals, Hund's Rule, Aufbau's Principle (till Atomic no. 30), Definition & types of valency (Electrovalency & Covalency), Octet Rule, Duplet Rule, Formation of Electrovalent & Covalent Compounds e.g. Nacl, $CaCl_2$, MgO, $AlCl_3$, CO_2, H_2O, Cl_2, NH_3, C_2H_4, N_2, C_2H_2. Distinction between electrovalent & covalent compounds.	06	12
02	**Electrochemistry** Electrolytic dissociation, Arrhenius Theory of Ionisation, Degree of Ionisation & factors affecting degree of ionization. Significance of the terms involved in Electrolysis- Such as Conductors, Insulators , Dielectrics, Electrolyte, Non Electrolyte, Electrolysis, Electrolytic Cell, Electrodes. Mechanism of Electrolysis. Concept of electrode potential such as reduction potential & oxidation potential. Electrochemical Series, Electrolysis of CuSO4 Solution by using Cu Electrode & Platinum Electrode, Electrolysis of NaCl solution & fused NaCl by using carbon electrode, Faraday's first & second law of Electrolysis & Numericals, Electrochemical Cells & Batteries, Definition, types such as Primary & Secondary Cells & their examples. Construction, Working & Applications of Dry Cell & Lead – Acid Storage Cell, Applications of Electrolysis such as Electroplating & Electro refining, Electrometallurgy & Electrotyping.	08	16
03	**Metals & Alloys** **3.1. Metals** (Marks:10): Occurrence of Metals, Definition of Metallurgy, Mineral, Ore, Gangue, Flux & Slag, Mechanical Properties of metals such as Hardness, Toughness, Ductility, Malleability, Tensile strength, Machinability, Weldability, Forging, Soldering, Castability. Stages of Extraction of Metals from its Ores in detail i.e. Crushing, Concentration, Reduction, Refining. Physical Properties & Applications of some commonly used metals such as Fe, Cu, Al, Cr, Ni, Sn, Pb, Zn, Co, Ag, W. **3.2. Alloys** (Marks: 08): Definition of Alloy, Purposes of Making alloy. Preparation Methods, Classification of Alloys such as Ferrous & Non Ferrous & their examples. Composition, Properties & Applications of Alnico, Duralumin, Dutch Metal, German Silver / Nickel Silver, Gun Metal, Monel metal, Wood's Metal, Babbit metal.	10	18
04	**Non Metallic Materials** **4.1. Plastics** (Marks: 04): Definition of Plastic, Formation of Plastic by Addition & Condensation Polymerisation by giving e.g. of Polyethylene & Backelite plastic Respectively, Types of Plastic, Thermosoftening & Thermosetting Plastic, with Definition, Distinction & Compounding of Plastics – Resins, Fillers, Plasticizers, Accelerators, Pigments & their examples, Engineering Applications of Plastic based on their properties. **4.2. Rubber** (Marks: 04): Natural Rubber: Its Processing, Drawbacks of Natural Rubber, Vulcanisation of Rubber with Chemical Reaction. Synthetic Rubber: Definition, Distinction Between natural & synthetic rubber. Properties of rubber such as elasticity, abrasion resistant, stress & strain and related engg. application. **4.3. Thermal Insulating Materials** (Marks: 04): Definition & types. Characteristics of insulators. Thermal insulators. Properties & Applications of glasswool, Asbestos, Cork.	06	12
05	**Environmental Effects (Awareness Level)** **5.1. Pollution & Air pollution** (Marks 10): Definition of pollution & pollutant, Causes of Pollution, Types of Pollution - Air & Water Pollution. **Air Pollution**: Definition, Types of Air pollutants their Sources & Effects, Such as Gases, Particulates, Radioactive Gases, Control of Air Pollution, Air Pollution due to Internal Combustion Engine & Its Control Methods, Deforestation their effects & control measures. Causes, Effects & control measures of Ozone Depletion & Green House Effects.	12	22

Chapter	Name of the Topic	Hours	Marks
	5.2. Water Pollution & Wastes (Marks 12): Definition, Causes & Methods of Preventing Water Pollution, Types of Waste such as Domestic Waste, Industrial Waste, their Physical & Biological Characteristics, Concept & significance of BOD, COD, Biomedical Waste & E – Waste, their Origin, Effects & Control Measures. Preventive Environmental Management (PEM) Activities.		
	Total	**42**	**80**

PRACTICAL

Intellectual Skills: 1. Analyse given solution, 2. Interpret the results.

Motor Skills: 1. Observe Chemical Reactions, 2. Measure the quantities Accurately, 3. Handle the apparatus carefully.

List of Experiments:

01 - 07 Qualitative Analysis of **four salts**, Containing One Basic & One Acidic. Radical Listed below.
Basic Radicals: Pb^{+2}, Cu^{+2}, Al^{+2}, Fe^{+2}, Fe^{+3}, Cr^{+3}, Zn^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Mg^{+2}, K^{+}, NH_4^{+}.
Acidic Radicals: Cl^{-}, Br^{-}, I^{-}, CO_3^{-2}, SO_4^{-2}, NO_3^{-}.

05 To Determine E.C.E. of Cu by Using CuSO4 Solution & Copper Electrode
06 To standardize KMnO4 using Sodium oxalate.
07 To determine percentage of Fe in the given Mohr's salt.
08 To Prepare a chart to showing application of metals like Fe, Cu, Al, Cr, Ni, Sn, Pb, Co.
09 To determine Carbon Monooxide, CO2 content emission from petrol vehicle.
10 To Determine Dissolved Oxygen in a Water Sample.

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Engineering Chemistry	Jain & Jain	Dhanpat Rai and Sons
02.	Engineering Chemistry	S.S. Dara	S. Chand Publication
03.	Industrial Chemistry	B. K. Sharma	Goel Publication
04.	Environmental Chemistry & Pollution Control	S.S. Dara	S. Chand Publication
05.	Polytechnic Chemistry	Vedprakash Mehta	Jain brothers
06.	Engineering Chemistry	M.M. Uppal	Khanna Publishers

Course Name : 03 Years Diploma in Engineering (First Semester)
Subject Title : **Engineering Graphics-I** • Subject Code : 105

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
02	0	4	50+50	40+30	10+20	13 (TH)	20+25	4 Hrs. (TH)

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: Normally Graphical representation are used for expressing intents and contents. Engineering Graphics is the language of engineers. The concepts of Engineering Graphics are used to develop, express the ideas, and conveying the instructions which are used to carry out jobs in the field Engineering. The course illustrates the techniques of graphics in actual practice. This preliminary course aims at building a foundation for the further course in drawing and other allied subjects.

OBJECTIVES: The student should be able to:

1. Draw different engineering curves and know their applications
2. Draw orthographic projections of different objects.
3. Visualize three dimensional objects and draw Isometric Projections.
4. Use the techniques and able to interpret the drawing in Engineering field.
5. Use computer aided drafting packages.

CONTENTS: Theory

Chapter	Name of the Topic	No. of Sheets	No. of Hours	
			Theory	Practical
01	1.1. Drawing Instruments and sheet layout 1.2. Letters and Numbers as per BIS: SP46-2003 1.3. Scale (Plane and diagonal scale)	02	01	04
02	Curves and Conic Section 2.1. To draw ellipse by directrix and arc of circle method 2.2. To draw parabola by directrix and rectangle method 2.3. To draw hyperbola by rectangle and directrix method.	01	02	04
03	Introduction to orthographic projection 3.1. Projection of point on principal, auxiliary and profile planes. 3.2. Idea of shortest distance.	01	02	04
04	Projection of straight line on principal plane in the following cases. 4.1. Parallel to both H.P. and V.P. 4.2. Inclined to one plane and parallel to other plane. 4.3. Inclined to both plane.	01	02	04
05	Projection of different simple shapes eg. Circle, Triangle, Rectangle, Pentagon & Hexagon on principal plane (Inclined to one plane and to both planes)	01	02	04
06	Projection of simple solid. 6.1. Projection of Prism, Pyramid, Cone, Cylinder, and Cube with their axis inclined to one reference plane and parallel to other.	01	02	04
07	7.1. Section of simple solids with true shape of sectioned portion. 7.2. Development of solid surfaces eg. Prism, Cylinder, Cone, Pyramid and Cubes.	01	02	04
08	8.1. Isometric Scale and their use in drawing isometric views of single and compound solids. (Simple case only)	01	02	04
09	9.1. Intersection of solids. Curves of intersection of the surfaces of the solids in the following case; a. Prism with Prism, b. Cylinder with cylinder, c. Prism with cylinder, d. Cylinder with cone with different axis.	01	02	04
10	10.1. Prospective Projection	01	02	04
11	11.1. AutoCAD Basics, Layers, multi-layer images, graphic interfaces, different views to be drawn.	03	10	16
	Total	**14**	**28**	**56**

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Engineering Drawing	N.D. Bhatt	Charotkar Publishing House
02.	Engineering Drawing	R.K.Dhawan	S.Chand Co.
03.	Engineering Graphics	K.R.Mohan	Dhanpat Rai & Publication
04.	Engineering Drawing	P.J. Shah	—
05.	Engineering Drawing	P.S. Gill	—
06.		Mastering AutoCAD	BPB Publication

Course Name : 03 Years Diploma in Engineering (First Semester)
Subject Title : **Engineering Mathematics-I** • Subject Code : 102

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
03	01	—	100	80	20	26	40	3 Hrs.

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: Mathematics provides foundation for all engineering subjects. Deep thought is given while selecting topics of this subject known as "Engineering Mathematics" which intends to teach students basic facts, concepts and principles of mathematics as a tool to analyze engineering problems. It lays down the foundation for understanding core engineering and technology subjects.

OBJECTIVES: This subject helps the students to develop logical thinking, which is useful in comprehending the principles of all other subjects. Analytical and systematic approach towards any problem is developed through learning of this subject. Mathematics being a versatile subject can be used as a tool at every stage of human life.

SUB OBJECTIVE: This subject is divided into four units: (1) Algebra, (2) Trigonometry, (3) Coordinate Geometry and (4) Vector. Upon completion of these Units the student shall be able to:

1.1 Use Logarithms in engineering calculations
1.2 Resolve Rational Fraction into sum of Partial Fractions in engineering problems
1.3 Use Matrices for solving engineering problems
1.4 Understand the concept of Binomial Expansion and use of Permutation & Combination
2.1 Solve simple problems on Compound Angles
2.2 Solve problems using the formulae for Multiple and Sub-multiple Angles
2.3 Apply Transformations for solving the problems in Trigonometry
2.4 Use Inverse Trigonometric Functions for solving engineering problems
2.5 Understand Properties of triangles
3.1 Appreciate the concept of position of any point in a plane or in space
3.2 Distance between two points and its application in solving engineering problems
3.3 Solve the problems on straight line
3.4 Solve the problems on Circles
4.1 Appreciate the concept of a new type of physical quantity called Vector
4.2 Algebra of Vectors
4.3 Solve engineering problems like work done, moment of force about a point as well as about a line.

CONTENTS: Theory

Chapter	Name of the Topic	Hours	Marks
01	ALGEBRA		
	1.1. Prerequisites Revision of • Arithmetic, Geometric and Harmonic Progressions, • Formula of nth term and sum to n-terms of A.P. and G.P. • Expression- terms of A.P. and G.P. • Expression of Sn , Sn^2 and Sn^3. • Quadratic equations with real coefficients and relation between their roots & coefficient	01	01
	1.2. Logarithms • Definition of logarithm (Natural and Common logarithm) • Laws of logarithm • Examples based on 1.2.1 to 1.2.2	03	04
	1.3. Partial Fraction • Definition of Polynomial Fraction Proper & Improper Fractions and definition of Partial fractions. • To Resolve proper fraction into partial fraction with denominator containing non repeated linear factors, repeated linear factors and irreducible non repeated quadratic factors. • To resolve improper fraction into partial fraction.	03	06

Chapter	Name of the Topic	Hours	Marks
	1.4. Determinant and Matrices **Determinant** (4 Marks) • Definition and expansion of determinants of order 2 and 3. • Cramer's rule to solve simultaneous equations for 2 and 3 unknowns. **Matrices** (12 Marks) • Definition of a matrix of order m X n and types of Matrices with examples. • Algebra of matrices such as equality, addition, subtraction, scalar multiplication and multiplication of two matrices. • Transpose of a matrix. • Minor, Cofactor of an element of a matrix, adjoint of matrix and Inverse of matrix by Adjoint method. • Solution of simultaneous equations containing 2 and 3 unknowns by matrix inversion method. • Idea of Rank of Matrix and their calculation.	08	16
	1.5. Binomial Theorem • Definition of factorial notation, definition of permutation and combinations with formula (without proof). • Derivation of simple identities and solution based on it • Binomial theorem for positive index. • General term, Middle term, independent term and coefficient of xn • Binomial theorem for negative index (only idea). • Approximate value (only formula).	02	04
02	TRIGONOMETRY **2.1. Revision** • Measurement of an angle (degree and radian). Relation between degree and radian. • Trigonometrical ratios of 0° , 30° , 45° , 60°, 90°, 90°±?, 180°±? and 360°±? • Fundamental identities.	01	01
	2.2. Trigonometric Ratios of Allied, Compound, Multiple & Submultiple Angles Questions based on numerical computations.	03	06
	2.3. Transformation formula of Product into sums or difference and vice versa, simple problems based on it	03	06
	2.4. Inverse Trigonometric Ratios • Definition of inverse trigonometric, ratios, Principal values of inverse trigonometric ratios. • Relation between inverse trigonometric ratios.	02	04
	2.5. Properties of Triangle • Sine, Cosine, Projection and tangent rules (without proof). Simple problems.	02	04
03	COORDINATE DISTANCES **3.1. Point and Distances** • Distance formula, Section formula, midpoint, centroid of triangle. • Area of triangle and condition of co-llinearity.	02	04
	3.2. Straight Line • Slope and intercept of straight line. • Equation of straight line in slope point form, slope-intercept form, two-point form, two-intercept form, normal form. General equation of line. • Angle between two straight lines condition of parallel and perpendicular lines. • Intersection of two lines. • Length of perpendicular from a point on the line and perpendicular distance between parallel lines.	05	10
	3.3. Circle • Equation of circle in standard form, centre – radius formula and diameter formula. • General equation of circle, its centre and radius, simple problem	02	04
04	VECTOR ALGEBRA **4.1. Vectors** • Definition of vector, position vector, Algebra of vectors (Equality, addition, subtraction and scalar multiplication) • Dot (Scalar) product with properties. • Vector (Cross) product with properties.	03	06
	4.4. Applications 4.4.1. Work done and moment of force/s about a point & line	02	04
	TOTAL:	**42**	**80**

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Mathematics: A Textbook for Class XI Part I &II		NCERT
02.	Mathematics: A Textbook for Class XII Part I &II		NCERT
03.	Mathematics: A Textbook for Class XI Part I &II	R.D. Sharma	Dhanpat Rai Publication
04.	Mathematics: A Textbook for Class XII Part I &II	R.D. Sharma	Dhanpat Rai Publication
05.	Co-ordinate Geometry	S.L. Loney	S. Chand Publication
06.	Trigonometry	S.L. Loney	S. Chand Publication
07.	Higher Algebra	H.S. Hall & S.R. Knight	Book Palace, New Delhi (Metric edition)
08.	Higher Sr. Secondary School Mathematics for XI & XII	R.S. Agrawal	Bharti Bhawan, Patna
09.	Vector Algebra	L. Prasad	Bharti Bhawan, Patna

Note: In board examination, question setter may be advised to select 20% questions of objective, 30% of short type and remaining 50% of long type based on basic concepts, formula and calculations respectively.

Course Name : 03 Years Diploma in Engineering (First Semester)
Subject Title : **Engineering Physics-I** • Subject Code : 103 / 107

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
03	1	—	100	80	20	26	40	3 Hrs.
Practical	—	2	50	40	10	13	20	4 Hrs.

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: Basic science forms the foundation of Engineering. In particular Physics provides fundamental facts, principles, laws, and proper sequence of events to streamline Engineering knowledge.

OBJECTIVES: The student should be able to:

- Measure given dimensions by using appropriate instruments accurately.
- Select proper measuring instrument on the basis of range, least count & precision required for measurement.
- Differentiate kinetic and kinematics and solve the problems on kinematics and kinetics.
- Use principles of illumination for enhancing work efficiency.
- Analyze variation of sound intensity with respect to distance.
- Identify different factors affecting acoustical planning of buildings.
- Select proper material for intended purpose by studying properties of materials.
- Identify good & bad conductors of heat.
- Identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.

CONTENTS: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Units and Measurements** **1.1.** Need of measurement and unit in engineering and science, definition of unit, requirements of standard unit, systems of units-CGS,MKS and SI, fundamental and derived quantities and their units. **1.2.** Definition of dimensions with examples, principle of homogeneity of dimensions, limitations of dimensions. **1.3.** Definition of accuracy, precision and error, estimation of errors – absolute error, relative error and percentage error, rules and identification of significant figures. (Numericals on percentage error and significant figures)	04	06

02	**Mechanics** **2.1. Motion along a Straight Line and Force** Concept of scalar and vector quantities, Equations of motion with constant acceleration (derivation not required), Equations of motion of falling body under gravity, Newton's laws of motion, Force, inertia, Action and reaction, tension, momentum, impulse and impulsive force with practical examples (basic Idea), Conservation of linear momentum. (Simple problems on linear motion) **2.2. Angular Motion** Definition of angular displacement, angular velocity and angular acceleration, relation between linear velocity and angular velocity, definition of simple harmonic motion (SHM), SHM as a projection of uniform circular motion on any diameter, equation of SHM, derivation of displacement, velocity and acceleration of a body executing SHM.	04 05	06 08
03	**Gravitation** Newton's laws of gravitation,Newton's gravitational constant (G) and its SI unit, Acceleration due to gravity (g) and its relation with "G",Variation of g with altitude and latitude(deduction not required) (Simple problems)	03	06
04	**Work , Energy & Power** Definition of work, energy and power, equations for P.E. & K.E., Work-Energy principle, Representation of work by using graph, work done by a torque (no derivation). (Numericals on work, potential and kinetic energy)	02	06
05	**General Properties of Matter** **5.1. Elasticity**: Deforming force, restoring force, elastic and plastic body, stress and strain with their types. elastic limit, Hooke's law, Young's modulus, bulk modulus, modulus of rigidity and relation between them (no derivation). (Numerical on stress, strain and Young's modulus) **5.2. Surface Tension**: Molecular force, cohesive and adhesive force, Molecular range , sphere of influence, Laplace's molecular theory, Definition of surface tension and its S.I. unit, angle of contact, capillary action with examples, shape of meniscus for water and mercury, relation between surface tension , capillary rise and radius of capillary (no derivation),effect of impurity and temperature on surface tension. (Numerical on relation between surface tension, capillary rise and radius) **5.3. Viscosity**: Definition of viscosity, viscous force, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its S.I. unit, streamline and turbulent flow with examples, critical velocity, Reynolds's number and its significance, derivation of viscous force for free fall of spherical body through viscous medium, upthrust, terminal velocity, Stoke's law (statement and formula). (Numerical on coefficient of viscosity, Reynolds number and Stoke's formula)	04 04 04	08 08 08
06	**Heat** **Transmission of Heat and Expansion of Solids**: Three modes of transmission of heat-conduction, convection and radiation, good and bad conductor of heat with examples, law of thermal conductivity, coefficient of thermal conductivity and its S.I. unit, Definition of linear, aerial and cubical expansion and relation between them. (no derivation). (Numericals on law of thermal conductivity, and coefficients of expansions)	04	08
07	**Acoustics** **7.1. Sound:** Definition of wave motion, amplitude, period, frequency, and wavelength, relation between velocity, frequency and wavelength , longitudinal and transverse wave, definition of stationary wave , node and antinode, forced and free vibrations, definition of resonance with examples, derivation of formula for velocity of sound with end correction. (Numericals on relation v = n ? and resonance) **7.2. Acoustics of Building:** Acoustics-concept and definition, Intensity and loudness of sound, becho, Reverberation standard reverberation time, Sabine's formula, Conditions for good acoustics, Factors affecting acoustical planning of auditorium. (Numericals on Sabine's formula)	04 04	06 06

PRACTICAL (Skills to be developed)

Intellectual Skills: Proper selection of measuring instruments on the basis of range, least count, precision and accuracy required for measurement.

Analyze properties of matter & their use for the selection of material.

To verify the principles, laws, using given instruments under different conditions.

To read and interpret the graph.

To interpret the results from observations and calculations.
To use these results for parallel problems.

Motor Skills: Proper handling of instruments.
Measuring physical quantities accurately.
To observe the phenomenon and to list the observations in proper tabular form.
To adopt proper procedure while performing the experiment.
To plot the graphs.

List of Experiments:

01. To know your Physics Laboratory.
02. To use Vernier Callipers for the measurement of dimensions of given object.
03. To use Micrometer Screw Gauge for the measurement of dimensions (Length, Thickness, Diameter) of given object.
04. To use spherometer for the measurement of thickness of a given glass piece.
05. To calculate Young's modulus of elasticity of steel wire by Vernier method.
06. To study capillary phenomenon and to verify that the height of liquid in capillary is inversely proportional to the radius of capillary.
07. To determine coefficient of viscosity of given liquid using Stoke's Method
08. To calculate the Linear Thermal coefficient of expansion for copper by using Pullinger's apparatus.
09. To determine refractive index of a glass using glass slab by pin method. ($\sin i/\sin r=\mu$).
10. To determine the velocity of sound by using resonance tube.

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Physics-I	V. Rajendran	Tata McGraw-Hill
02.	Applied physics	Arthur Beiser	Tata McGraw-Hill
03.	Engineering Physics	R.K.Gaur & S.L. Gupta	Dhanpat Rai Publication
04.	Fundamentals of Physics	Resnick, Halliday & Walker	Wiley India Pvt. Ltd.
05.	Core Physics-I	A. Kumar	Bharti Bhavan
06.	Pradeep's Fundamental Physics-XI	K.L. Gomber & K.L. Gogia	Pradeep Publication
07.	S. Chand's Principles of Physics-XI	V.K Mehta & Rohit Mehta	S. Chand Publication
08.	Dinesh New Millennium Physics-XI	S.K. Sharma	Dinesh Publication

Course Name : 03 Years Diploma in Engineering (First Semester)

Subject Title : **Fundamental of Computer** • Subject Code : 106 / 111

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
02	0	—	50	40	10	13	20	3 Hrs
Sessional	—	2	50	30	20	—	25	—

Note: 1. Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

RATIONALE: In Engineering Education role of computers and its knowledge is day by day increasing and every documentation and analysis requires basic fundamentals of computers. The accessibility to internet and presentation techniques are essential elements these days which is fully dependent on knowhow of computers irrespective of branches or discipline.

OBJECTIVES: The student should be able to:

1. Understand a computer system that has hardware and software components, which controls and makes them useful.
2. Understand the operating system as the interface to the computer system.
3. Use the basic function of an operating system.
4. Set the parameter required for effective use of hardware combined with and Application softwares.
5. Compare major OS like Linux and MS- Windows.

6. Use file managers, word processors, spreadsheets, presentation software's and Internet.
7. Have hands on experience on operating system and different application software.
8. Use the Internet to send mail and surf the World Wide Web.

CONTENTS: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Fundamentals of Computer** 1.1. Introduction 1.2. Types of Computer 1.3. Components of PC 1.4. Inputs & Output Devices 1.5. Computer Languages 1.6. Memory of Computer.	04	06
02	**Introduction to MS Office** 3.1. MS Word : Introduction, Starting MS-Word Screen and its Components, Elementary Working with MS-Word 3.2. MS Excel: Introduction, Starting MS-Excel, Basics of Spreadsheet, MS- Excel Screen and its Components, Elementary Working with MS-Excel. 3.3. MS Power Point: Introduction, Starting MS-PowerPoint, Basics of PowerPoint, MS-PowerPoint Screen and Its Components, Elementary Working with MS-PowerPoint.	08	12
03	**Introduction to Internet** 4.1. What is Internet? 4.2.Computer Communication and Internet. 4.3. WWW and Web Browsers. 4.4. Creating own Email Account. 4.5. Networking and types.	04	06
04	**Introduction to HTML and Software** 5.1. Introduction to HTML. Working of HTML 5.2. Creating and loading HTML pages, tags. 5.3. Structure of on HTML, Document, Stand Alone Tags. 5.4. Formatting text, Adding Images, Creating hyper Links, Tables. 5.6. Cyber security. 5.7. Computer virus.	08	10
05	**Information Technology** 6.1. Current IT Tools. 6.2. Social networking, mobile computing, cloud computing. 6.3. Introduction of IOT and IOE 6.4. Computer Application in various fields like Data analysis, database management, artificial intelligence.	06	06
	TOTAL	**30**	**40**

List of Practicals:

Exp. 1. ***Identification of different part of computer system and peripherals***

Exp. 2. ***Operations on operating system***:

1. Create a new folder and do the following: (a) Make a new folder in it. (b) Rename the initial folder. (c) Opening a new file. (d) Creating document in note pad. (e) Move the initial folder. (f) Copy the initial folder. (g) Delete the initial folder.
2. Implement the various well known features of Windows operating system such as Notepad, WordPad, Calculator, System tools etc. enclosed in Start? Programs? Accessories.
3. Implement various display properties by right clicking on the Windows Desktop.
4. Explore the taskbar of Windows.
5. Set the wall paper and screen saver.
6. Set the date/time

Exp. 3. ***Basic operations on MS Word***

1. Create a document and (a) Put Bullets and Numbers. (b) Apply various Font parameters. (c) Apply Left, Right, and Centre alignments. (d) Apply Hyperlinks. (e) Insert pictures. (f) Insert ClipArt. (g) Show the use of Word Art. (h) Add Borders and shading. (i) Show the use of Find and Replace. (i) Apply header/footers.

Exp. 4. ***Advance operations on MS Word***

2. Create any document and show the use of File? Versions.
3. Create any document and show the difference between paste and paste special.
4. Create any document and show the use of Washout/Watermark.
5. Implement the concept of mail merge.
6. Implement the concept of macros.
7. Implement the concept of importing a file/document.
8. Implement the concept of merging the documents.
9. Create a student table and do the following: (a) Insert new row and fill data. (b) Delete any existing row. (c) Resize rows and columns. (d) Apply merging/ splitting of cells. (e) Apply sort. (f) Apply various arithmetic and logical formulas. (g) Apply various arithmetic and logical formulas.
10. Create your resume using General Templates.

Exp. 5. ***Basic operation on electronic spreadsheet/excel***

1. Computer the division of each and every student of a class.
2. Generation of Electricity Bill
3. Generation of Telephone Bill
4. Generation of Salary statement of an employee
5. Generation of Mark Sheet of a student.
6. To compute mean / median / mode.
7. Generation graph to show the production of goods in a company during the last five years.
8. Compare the cost, overheads and sales figure of a company for last three years through appropriate chart.

Exp. 6. ***Advance operations on electronic spreadsheet***

1. Generation the following worksheet

Roll No.	Marks
2050	67
2051	49
2052	40
2053	74
2054	61
2055	57
2056	45

and do the following: (a) Create chart of the marks. (b) Compute sum of marks using auto sum, auto calculate and sum function. (c) Compute average of marks. (d) Show pass or fail if marks are above 50 or less than 50. (e) Put header and footer in the spread sheet.

2. Importing and exporting data from other files.
3. Program development in excel using simple commands.

Exp. 7. ***Power Point Presentation preparation***

1. Make a presentation of College Education System using : (a) Blank Presentation. (b) From Design Template. (c) From Auto Content Wizard

Exp. 8. **Animation and various effect in Power Point Presentation, exporting and importing contents from word/excel**

1. Make a presentation on "Wild Life " and apply the following: (a) Add audio and video effects. (b) Apply various Color Schemes. (c) Apply various animation schemes. (d) Apply slide show.

Exp. 9. **Simple program in HTML**

1. Create any webpage using following HTML tags: (a) Background Colour. (b) Font (Colour, Size, Face). (c) Bold / Italic / Underline. (d) Big / Small. (e) H1, H2, etc. (f) Marquee, (g) Ordered / Unordered List. (h) Data list.
2. Create Employee Table and apply various operations on it using HTML. Also put Border around the table.
3. Create Internal and External Hyperlinks in a Webpage.
4. Implement the concept of Frames in a Webpage.
5. Insert an image in a Webpage.
6. Design Home page of your Institute
7. Design Web page for tourism spots in your area
8. Prepare your CV and link on the web page
9. Use animation of image in a web page
10. Insert a table and perform table handling in web page.

Exp. 10. ***Basics of Internet, surfing, email account opening and transactions through email account***

1. Connect the Internet; open any website of your choice and save the Web Pages.
2. Search any topic related to your syllabus using any search engine and download the relevant material.
3. Create your E-Mail ID on any free E-Mail Server.
4. Login your E-Mail ID and do the following: (a) Read your mail, (b) Compose a new Mail, (C) Send the Mail to one person. (d) Send the same Mail to various persons. (e) Forward the Mail. (f) Delete the Mail, (g) Send file as attachment.
5. Surf Internet using Google to find information about yours state college.
6. Surf Internet using Google to find Tourism information about your state.
7. Surf Internet using Yahoo to find Hotel around your state.

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Data processing and Information Technology	C.S. French	BPB Publications
02.	Computer Fundamentals	P.K Sinha	BPB Publications
03.	The ABCs of Microsoft Office Professional Edition	Guy Hart-Davis	BPB Publication
04.	Microsoft Windows 98 Training Guide	Karl Schwartz	BPB Publication

Course Name : 03 Years Diploma in Engineering (First Semester)

Subject Title : **Workshop-I** • Subject Code : 12

TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Examination Scheme					
L TH	T	P	Full Marks	External Exam. Marks	Internal Exam. Marks	External Pass Marks	Total Pass Marks	Duration of External Exams.
01	—	04	50	30	20	—	25	—

RATIONALE: Engineering diploma technician is expected to know basic workshop practice. like Wood working, Sheet metal. The students are required to identify, operate, control various machines, select and use various tools and equipments related to Wood working and sheet metal processes together with exposure to fabrication soldering and joint making of various types.

OBJECTIVES: The student should be able to:

- Know basic workshop processes.
- Read and interpret job drawing.
- Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
- Operate, control different machines and equipments.
- Inspect the job for specified dimensions.
- Produce jobs as per specified dimensions.
- Adopt safety practices while working on various machines.

CONTENTS:

Chapter	Name of the Topic	Jobs	Theory (Hr.)	Practice (Hr.)
01	CARPENTRY SHOP 1. Introduction 2. Various types of woods 3. Different types of tools, machines and accessories 4. Practice Job: (a) Preparation of cross lap joints, (b) T Lap joints, (c) Dovetail Joints, (d) Wood turning	04	04	14
02	FITTING SHOP 1. Introduction 2. Various marking, measuring, cutting, holding and striking tools 3. Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc. 4. Working Principle of Drilling machine, Tapping dies its use. 5. Safety precautions and safety equipments. 6. Practice 3 Jobs (V groove, Square notch, Fitting of two parts)	03	03	12
03	SHEET METAL SHOP 1. Introduction 2. Various types of tools, equipments and accessories 3. Different types of operations in sheet metal shop 4. Soldering and riveting 5. Safety precautions 6. Practice Jobs (Making funnel, tray, cylinder)	03	03	14

Chapter	Name of the Topic	Jobs	Theory (Hr.)	Practice (Hr.)
04	TURNING SHOP 1. Introduction 2. Various marking, measuring, cutting, holding and striking tools 3. Working Principle of Drilling machine, Tapping dies its use. 4. Drilling and Tapping 5. Turning: Plain, taper 6. Threading and Knurling 7. Safety precautions and safety equipments.	03	04	16
	TOTAL	**13**	**14**	**56**

Skills to be Developed:

Intellectual Skills:

1. Ability to read job drawing
2. Ability to identify and select proper material, tools, equipments and machine.
3. Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.

Motor Skills:

1. Ability to set tools, work piece, and machines for desired operations.
2. Ability to complete job as per job drawing in allotted time.
3. Ability to use safety equipment and follow safety procedures during operations.
4. Ability to inspect the job for confirming desired dimensions and shape.
5. Ability to acquire hands-on experience.

Notes:

1. The Faculty/ Instructor shall give demonstration to the students by preparing a specimen job as per the job drawing.
2. The workshop diary shall be maintained by each student duly signed by Faculty/Instructor of respective shop.

LEARNING RESOURCES: REFERENCE BOOKS

Sl. No.	Title	Author	Publisher
01.	Workshop Technology	S.K. Hajara Chaudhary Chaudhary	Media Promotors and Publishers
02.	Workshop Technology	B.S. Raghuwanshi	Dhanpat Rai and Sons
03.	Production Technology	R.K. Jain	Khanna Publishers
04.	Workshop Technology	H.S.Bawa	Tata McGraw Hill
05.	Kent's Mechanical Engineering Hand Book		John Wiley and Sons
06.	Electronics Trade & Technology Development Corporation (A Govt. of India undertaking) Akbar Hotel Annex, Chanakyapuri, New Delhi-110 021 • Learning Materials Transparencies, CBT Packages developed by N.I.T.T.E.R. Bhopal		

SCHEME OF TEACHING AND EXAMINATION : SESSION 2019-20

1st Year of 3 Years Diploma in Mining Engineering

Duration of Semester : 30 Weeks • Student Contact Hours : 35 Hrs/Week • Total Marks : 1600

Sl. No.	Name of Subject	Subject	Subject Code	Teaching Scheme			Examination Scheme					
				L	T	P	Hours of Exam.	Full Marks of Subject	Final Exam./ Committee Marks	Internal Assessment No.	Pass Marks Final / Ext. Exam.	Pass Marks in Subjects
1.	Communication Skills	M101	Theory	2			3	100	80	20	26	40
2.	Engineering Mathematics	M102	Theory	2			3	100	80	20	26	40
3.	Engineering Physics	M103	Theory	2			3	100	80	20	26	40
4.	Engineering Chemistry	M104	Theory	2			3	100	80	20	26	40
5.	Engineering Graphics	M105	Theory	1			4	100	80	20	26	40
6.	Mine Surveying-I	M106	Theory	2			3	100	80	20	26	40
7.	Computer Fundamental & Progarmming	M107	Theory	2			3	50	40	10	13	20
8.	Elements of Mining Geology	M108	Theory	2			3	100	80	20	26	40
9.	Elements of Mining Technology	M109	Theory	2			3	100	80	20	26	40
10.	Engineering Physics-Practical	M110	Practical			2	4	100	80	20	26	40
11.	Engineering Chemistry-Pract.	M111	Practical			2	4	100	80	20	26	40
12.	Mine Surveying-I	M112	Practical			2	4	50	40	10	13	20
13.	Elements of Mining Geology practice	M113	Practical			2	4	50	40	10	13	20
14.	Engineering Graphics	M114	Sessional			2		100	60	40		50
15.	Computer Fundamentals (Practical)	M115	Sessional			2		50	30	20		25
16.	Elements of Mining Technology	M116	Sessional			2		100	60	40		50
	Total Hours of Teaching per week :			**16**	**1**	**16**						

L (Lecture), **P** (Practical), **T** (Tutorial)

Note: 1. Period of Class hours should be of 1 hrs duration as per AICTE norms.

2. Five (5) Hrs every week has been marked for students for Library and Student Centered Activities.
3. Drawing / Graphics / Practical / Sessional examinations will be held at parent institution.
4. Board will depute examiner for Practical examination.
5. Regarding sessional examination the parent institution will form a three member committee and this committee will examine the sessional records and hold viva of the examinee for 60 % marks allotted to the subject. Marks for remaining 40 % will be provided by the Faculty concerned on the basis of evaluation of each job / work throughout the semester.
6. Practical Training of 12 weeks shall be started after completion of 1st Year annual examination (Mandatory training for the partial fulfillment of Diploma).

Pakur Polytechnic, Pakur : An Exceptional Institute

(UNDER THE VISION OF SAME DIRECTOR, MR. ABHIJIT KUMAR)

The management of **Gumla Polytechnic** is headed by Mr. Abhijit Kumar, who is also the Director of **Pakur Polytechnic** (established by Govt. of Jharkhand). **Pakur Polytechnic** is recognised by AICTE, New Delhi and is in the process of acquiring ISO 2015:9001 quality certification.

It's a matter of great pride that CEGR (Centre for Education Growth & Research), New Delhi has recently recognised and awarded **Pakur Polytechnic** as the best managed Polytechnic in Jharkhand.

Pakur Polytechnic (Erstwhile Govt. Polytechnic, Pakur) is owned by Department of Higher and Technical Education, Govt. of Jharkhand and for upgradation, operation, maintenance and management under PPP Mode to M/s Cybobhubaneswar Educational Foundation. It has a state of art infrastructure spread over 7.0 acres with more than 2.0 lakh sqft builtup area. New building of 200 beded Girls hostel is now complete.

Pakur Polytechnic is a place of learning which began as an idea. After 3 years, it is now acknowledged as an institution for quality diploma engineering education. In pursuance of basic philosophy of providing quality education, which is in relevance to the needs of the industry and opportunities available with employing organizations.

Pakur Polytechnic, **Pakur** is actively offering Diploma Engineering program, with latest infrastructure. The college has received approval of AICTE, Govt. of India and is affiliated to S.B.T.E.-J.U.T. Jharkhand. It also conforms all the norms of the regulating authorities to achieve academic and professional excellence.

Mr. Abhijit Kumar, Director, Pakur Polytechnic receiving the Award of Excellence awarded by CEGR in a function at Delhi, presented by Prof. A.P. Mittal, Member-Secretary AICTE

In house sports and other extra curricular activities are integral part of overall learning process at Pakur Plytechnic

Pakur Polytechnic students are participating in a week-long training session at Tata Power Skill Development Institute, Dhanbad.

www.gumlapolytechnic.ac.in

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