Shri Vile Parle Kelavani Mandal`s

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

Vile Parle (West), Mumbai-400 056

Department of **COMPUTER ENGINEERING**

Three Years Full Time Diploma

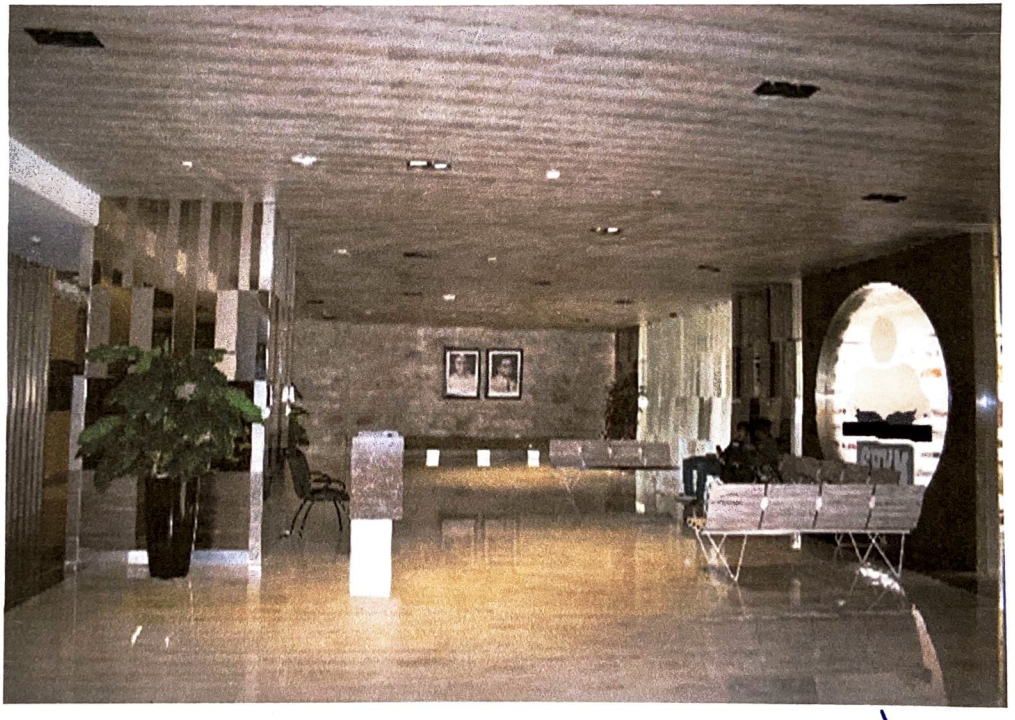
In

COMPUTER ENGINEERING

CURRICULUM

Semester Pattern

(Effective from June' 2019)



HEAD,
Department of Computer Engineering,
Shri Bhagubhai Mafatlal Polytechnic,
Irla, Netkar Ram Ganesh Gadkari Marg,
Vile Parle (W), Mumbai - 400 056

Approved Copy

Curriculum Co-Ordinator / COE

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC * MUMBAI 400 056.

PRINCIPAL
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
VILE PARLE (WEST), MUMBAI-400 056.

Shri Vile-Parle Kelavani Mandal's
Shri Bhagubhai Mafatlal Polytechnic,Mumbai

(AN ACADEMICALLY AUTONOMOUS GRANT-IN AID INSTITUTE)

CURRICULUM 2019

DIPLOMA PROGRAMME
IN
COMPUTER ENGINEERING

INDEX

PREFACE

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC started three years diploma programs and was affiliated to the Board of Technical Examinations, Maharashtra State, in 1963. The institute has been conferred an academic autonomous status since 1969 by Government of Maharashtra because of excellent performance, which enabled it to design the curriculum and examination scheme and to introduce inplant training, which involved industry-institute interaction. Thus, four years semester sandwich pattern came into existence. Since 1978-79, academic freedom was extended to all the full-time diploma programs. In 1989-90 full autonomy was granted to all the seven full-time diploma programs.

As a further development to the above, the Multi Point Entry and Credit System (MPECS) was initiated in 1981 on progressive basis. In this scheme students can regulate their pace of studies within the rules prescribed.

From 1993-94, full academic autonomy was extended to all the nineteen programs, which includes full-time diploma, part-time diploma and post-diploma programs. The students have to qualify for appearing in the final examinations as per details given in the MPECS rules. The examinations are conducted by the institute and the final diploma is awarded by the institute at the convocation function.

From the academic year 2016-17, our curriculum is revised and is converted to three-year diploma program. Teaching learning is done at the institute up to V semester and inplant training is offered at VI semester.

To incorporate the latest developments in technology and to have better industry institute interaction, the curriculum is revised again to be implemented from the academic year 2019-2020. This is a diploma program of three-year duration with inplant training in fifth semester.

TO incorporate the latest developments in technology and to have better industry institute interaction, the curriculum is revised again to be implemented from the academic year 2019-2020 which is Choice and Credit Based System (CCBS) This is a diploma program of three-year duration with 4-6 weeks summer internship after IV Semester Examination.

The vision of the institute is to be a premier technical training and development institute catering to the skill and professional development in multi-domain for successful employment / selfemployment by offering need based curriculum and state of the art infrastructure. The institute shall be the center for excellence in skill development and community development through different training programmes, incubation centre and entrepreneurship development. For this the institute is committed to provide education for skill development, engineering diploma and continuing education programmes for enhancement of employability skills of the aspirants in the job/self-employment through continually developing quality learning systems. The institute aims at holistic and student centric education in collaboration with industry and having practice based education. To achieve this continuous efforts are made to design the curriculum considering the latest development in the industrial sector and technology.

DIPLOMA IN COMPUTER ENGINEERING

The Course is Three Years Full Time Diploma in Computer Engineering (Un-aided) with summer in plant training having Choice and Credit Based System (CCBS). The emphasis of the course is on Computer Education at a Technician Level covering Knowledge and practical skill sets of system Software, Programming Languages, Database system and administration, Web Technologies, Net Work administration, Hardware along with basic Sciences and engineering Courses - Mathematics, Physics, Electronics and Electrical Engineering. The Curriculum also focuses on developing soft skills such as communication skills and life skills. Considering the need of cutting edge, courses like Iot, Computer Gaming, Ethical Hacking, Mobile application development and cloud clouding.

For Award of Diploma under Choice and Credit Based System (CCBS), the student/candidate has to earn total 180 credits including compulsory courses out of total available 214 credits from 47 courses. The examination pattern/scheme will be same as per the other diploma examination of this institute. The Final Award of Grade will be given on the basis of marks obtained in award winning courses of the final year.

SUMMER INTERSHIP TRAINING:

Students have to undergo internship training after IV semester as a part of their curriculum. Also a report has to be submitted at the end of 4 weeks' duration internship training. Internship training provides an insight to students about what is happening in the real world and also supplements their class room knowledge.

In this Curriculum-2019, the student has to acquire 180 credits for successful completion of Diploma Programme. The courses of curriculum are structured at 4 different levels i.e. Basic Courses, Core Courses, Application Courses, and Management Courses.

The minimum entry level is 10th. However, the curriculum provides "Choice and credit based system (CCBS)" for the students opting admission after passing 12th, ITI, MCVC. At higher entry level, the students will get exemptions in certain courses as per the rules.

There is a flexibility for opting the courses as per the choice of students. The curriculum provides "Sample Path" as a guide line for selection of courses in each term for entry level as 10th. The List of Courses for Award of Class after completion of Diploma Programme is prescribed separately in this curriculum.

The fulfilment of programme outcome as stated in the Curriculum-2019 will depend on its effective implementation. The teachers who are implementing the curriculum were also involved in the design process of curriculum, hence, I hope that the Curriculum-2019 will be implemented in effective way and the pass outs will acquire the requisite knowledge and skills to satisfy the industrial needs.

(Dr. M.Z.SHAIKH)
Principal
Shri Bhagubhai Mafatlal Polytechnic,Mumbai

VISION

SBM Polytechnic aspires to be the lead institute in providing need based technical education

MISSION

1 To provide state of art infrastructure and latest equipment for providing a stimulating learning environment.

2 To prepare students to meet the dynamic needs of the industry by periodic reviewing and upgradation of curriculum through an interactive process with industry.

3 To inculcate a spirit of excellence in terms of academic performance, research and innovation in faculty by providing appropriate support and incentive systems.

4 To promote and support Co-Curricular, extra-curricular activities and industry interaction to make students socially sensitive and employable.

COMPUTER ENGINEERING DEPARTMENT

VISION

Create a sustainable academic environment to produce highly competent computer professionals of the future

MISSION

M1. To expose students to latest tools and technologies in computing.
M2. To foster the professional development of students by providing excellence in education.
M3. To Adapt to rapid advancements in computing by engaging students in the lifelong learning.
M4. To inculcate sound ethical, moral and social values amongst students for benefit of the society

JOB PROFILE OF COMPUTER ENGINEERING DIPLOMA PASSOUTS

The objectives of the programme is to develop skills of pass out who can be employed in computer industry as

A Hardware and network engineer
A Computer Programmer
A Full stack developer
A Database administrator System Administrator
An Application developer for IoT, Mobile and cloud Environment

DIPLOMA PROGRAMME IN COMPUTER ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1. Able to identify, frame and solve computing problems by applying their knowledge in Computer engineering.
PEO2. Promote lifelong learning by integrating academic knowledge and practical applications.
PEO3. Depict effective team work and practical skills for holistic development.

PROGRAMME OUTCOMES (POs)

On Successful Completion of Diploma Programme in Computer Engineering, the pass outs will be able to:

1. Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
2. Problem analysis: Identify and analyse well-defined engineering problems using codified standard methods.
3. Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
4. Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
5. Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.
6. Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
7. Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

On successful completion of Diploma Programme in Computer Engineering, the student will be able to:

PSO1. Demonstrate the fundamental knowledge in the areas of Operating system, Web Technology, Microprocessor based system and IOT by applying programming skills and developing applications.
PSO2. Administer and manage Open source, Networking, Security and Database domains to enhance student growth.

MAPPING OF MISSION AND PROGRAMME EDUCATIONAL OBJECTIVES

Sr. No.	Mission	Component of Mission Statement	PEO/s
1	M1	To expose students to latest tools and technologies in computing.	I, II, III
2	M2	To foster the professional development of students by providing excellence in education.	I, II, III
3	M3	To Adapt to rapid advancements in computing by engaging students in the lifelong learning.	I, II, III
4	M4	To inculcate sound ethical, moral and social values amongst students for benefit of the society	I, II, III

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES AND PROGRAMME OUTCOMES

Sr. No.	Programme Educational Objectives (PEOs)	Programme Outcomes (POs)
1	Able to identify, frame and solve computing problems by applying their knowledge in Computer engineering.	PO1,PO2,PO3,PO4,PO7
2	Promote lifelong learning by integrating academic knowledge and practical applications.	PO1,PO2,PO3,PO4,PO7
3	Depict effective team work and practical skills for holistic development.	PO3,PO4,PO5,PO6

MAPPING OF PROGRAMME SPECIFIC OUTCOMES AND PROGRAMME OUTCOMES

Sr. No.	Programme Specific Outcomes (PSOs)	Programme Outcomes (POs)
1	Demonstrate the fundamental knowledge in the areas of Operating system, Web Technology, Microprocessor based system And IOT by applying programming skills and developing applications.	PO1,PO2,PO3,PO4,PO5, PO6,PO7
2	Administer and manage Open source, Networking, Security and Database domains to enhance student growth.	PO1,PO2,PO3,PO4,PO5, PO6,PO7

MAPPING OF PROGRAMME OUTCOME AND COURSES

POs No.	Program Outcome (POs)	Course Name
1	**Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.	EMT198901 (05) EMT, APH198902 (05) APH, ENG198904(04) ENG, DLS198911 (03) DLS, CMS198903(04) CMS FCS198905(04) FCS, AMT198908 (05) AMT, BEX190911 (05) BEX, BEE190801 (05) BEE, DEX198913 (05) DEX
2	**Problem analysis:** Identify and analyse well-defined engineering problems using codified standard methods.	WSD198907 (06) WSD, PRC198912 (06) PRC, CPP198914 (06) CPP, DST198915 (06) DST, EUP190805 (06) EUP, PRP198918 (06) PRP, FOS198916 (06) FOS, CGR198920 (05) CGR, PHPI98922 PHP (6)
3	**Design/ development of solutions:** Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.	CWP198906 (03) CWP, PCA190802 (5) PCA, FCN190803 (06) FCN, SPR190804 (05) SPR, DBS198917 (05) DBS, MBS190806 (05) MBS, HCI198919 (05) HCI, NWAI98921 (06) NWA, ANA19081S (6)ANA, EMSI90811 (06) EMS, PHA190807PHA (5), MCC190809 MCC (5) , DBAI90810 DBA (5), SDM190812 SDM (6),GDD198926GDD(5), CLD198924CLD(6) , DWM198925 DWM (6) , IOT198927 IOT (6), SYS190818 SYS (5)
4	**Engineering Tools, Experimentation and Testing:** Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.	LXA190808 LXA (5) , STT190814 (05) STT, HTE190817 THE (6)
5	**Engineering practices for society, sustainability and environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.	EVS198909 (02) EVS
6	**Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.	PRO190816 (6) PRO EDCI98928 EDC (3)
7	**Life-long learning:** Ability to analyse individual needs and engage in updating in the context of technological changes.	SPT190819 (06) SPT, TWT190813 TWT (2), IPP 198923 IPP (2)

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

w.e.f. Batch admitted in June, 2019 (Progressively)

SEMESTER: I

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	Engineering Mathematics (EMT198901)	3	0	0	2	5	3	70	20	10	70	25	0	0	125	B*	325
2	Applied Physics (APH198902)	3	2	0	0	5	1	70 @	20	10	70	25	50	0	175	B*	325
3	Communication Skills (CMS198903)	3	0	0	1	4	3	70	20	10	70	25	0	0	125	B*	314
4	Engineering Graphics (ENG198904)	2	2	0	0	4	0	0	0	0	0	50	0	50	100	B*	224
5	Fundamentals of Computing System (FCS198905)	2	2	0	0	4	0	0	0	0	0	50	50	0	100	C*	224
6	Workshop & Practice [CSE /IT] (CWP198906)	1	2	0	0	3	0	0	0	0	0	50	0	50	100	C*	123
7	Website Designing (WSD198907)	2	4	0	0	6	3	70	20	10	70	50	50	0	200	C*	246
	TOTAL	**16**	**12**	**0**	**3**	**31**	**No. of Papers= 04**		**80**	**40**	**280**	**275**	**150**	**100**	**925**		**16/15/31**
	TOTAL PERIODS= 31								**TOTAL MARKS=**						**925**		

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC ★ MUMBAI 400056

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

w.e.f. Batch admitted in June, 2019 (Progressively)

SEMESTER: II

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	Applied Mathematics (AMT198908)	3	0	0	2	5	3	70	20	10	70	25	0	0	125	B*	325
2	Environmental Studies (EVS198909)	2	0	0	0	2	0	0	0	0	0	50	0	0	50	B*	202
3	Development of Life Skills (DLS198910)	2	0	0	1	3	0	0	0	0	0	50	0	50	100	B*	213
4	Basic Electronics (BEX198911)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	B*	325
5	Programming in C (PRC198912)	2	4	0	0	6	3	70	20	10	70	25	50	0	175	C*	246
6	Basics of Electrical Engineering (BEE190801)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	B*	325
7	PC Architecture (PCA190802)	3	2	0	0	5	3	70	20	10	70	25	0	25	150	C*	325
	TOTAL	**18**	**10**	**0**	**3**	**31**	**No. of Papers= 05**		**100**	**50**	**350**	**225**	**150**	**75**	**950**		**18/13/31**
	TOTAL PERIODS= 31								**TOTAL MARKS=**						**950**		

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC * MUMBAI 400056

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

w.e.f. Batch admitted in June, 2019 (Progressively)

SEMESTER: III

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	Fundamentals of Computer Network (FCN190803)	4	2	0	0	6	3	70	20	10	70	25	0	25	150	C*	426
2	Digital Electronics (DEX198913)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	C*	325
3	Programming in C++ (CPP198914)	2	4	0	0	6	3	70	20	10	70	25	50	0	175	C*	246
4	Data Structure (DST198915)	4	2	0	0	6	3	70	20	10	70	25	50	0	175	C*	426
5	System Programming (SPR190804)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	C	325
6	Event Driven & UI Programming (EUP190805)	2	4	0	0	6	3	70	20	10	70	25	50	0	175	C	246
	TOTAL	**18**	**16**	**0**	**0**	**34**	**No. of Papers= 06**		**120**	**60**	**420**	**150**	**250**	**25**	**1025**		**18/16/34**
	TOTAL PERIODS= 34								**TOTAL MARKS=**						**1025**		

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

SEMESTER: IV

w.e.f. Batch admitted in June, 2019 (Progressively)

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	Fundamentals of Operating System (FOS198916)	4	2	0	0	6	3	70	20	10	70	25	50	0	175	C*	426
2	Microprocessor based Systems (MBS190806)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	A*	325
3	Database Management System (DBS198917)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	C*	325
4	Programming in Python (PRP198918)	2	4	0	0	6	3	70	20	10	70	25	50	0	175	C*	246
5	Human Computer Interface (HCI198919)	3	2	0	0	5	3	70	20	10	70	25	0	25	150	A	325
6	Computer Graphics (CGR198920)	3	2	0	0	5	3	70	20	10	70	25	50	0	175	A	325
7	Summer Inplant Training/Internship ¥ (SPT190819)	0	0	0	0	6	0	0	0	0	0	50	0	50	100	A*	006
	TOTAL	**18**	**14**	**0**	**0**	**38**	**No. of Papers= 06**		**120**	**60**	**420**	**200**	**250**	**75**	**1125**		**18/14/38**
	TOTAL PERIODS= 32								**TOTAL MARKS= 1125**								

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc.
PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.
¥ Students will be placed in industry for internship of 4-6 weeks after the examination.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC ★ MUMBAI 400 056.

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

SEMESTER: V

w.e.f. Batch admitted in June, 2019 (Progressively)

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	# Network Administration (NWA198921)	2	4	0	0	6	3	70	20	10	70	50	0	50	200	A*	246
2	#Embedded System (EMS190811)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
3	**# Elective I (Any One)**																
3.1	Python for Hardware Applications (PHA190807)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
3.2	Linux Administration (LXA190808)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
3.3	Mobile Computing (MCC190809)	3	2	0	0	5	3	70	20	10	70	50	0	50	200	A*	325
4	# Database Administration (DBA190810)	3	2	0	0	5	3	70	20	10	70	50	0	50	200	M*	325
5	Web Development using PHP (PHP198922)	2	4	0	0	6	-	-	-	-		50	50	0	100	A	246
6	Software Development Methodologies (SDM190812)	2	4	0	0	6	3	70	20	10	70	25	0	25	150	M	246
7	Technical Writing and Tools (TWT190813)	0	2	0	0	2	0	0	0	0	0	50	0	0	50	A	022
8	IT Innovative Project & Practices (IPP198923)	0	2	0	0	2	0	0	0	0	0	50	0	0	50	A	022
	TOTAL	**16**	**22**	**0**	**0**	**38**	**No. of Papers= 05**		**100**	**50**	**350**	**375**	**100**	**175**	**1150**		**16/22/38**
	TOTAL PERIODS= 38								**TOTAL MARKS=**						**1150**		

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400 056.

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

PROGRAMME: COMPUTER ENGINEERING

SEMESTER: VI

w.e.f. Batch admitted in June, 2019 (Progressively)

Duration - 16 Weeks

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	# Software Testing and Tools (STT190814)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
2	# Advanced Network Administration (ANA190815)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
3	# Project (PRO190816)	0	6	0	0	6	0	0	0	0	0	50	0	50	100	A*	066
4	# Elective II (Any One)																
4.1	Cloud Application Development (CLD198924)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
4.2	Data ware Housing & Mining (DWM198925)	2	4	0	0	6	3	70	20	10	70	50	0	50	200	A*	246
4.3	Hacking Techniques & Ethics (HTE190817)	4	2	0	0	6	3	70	20	10	70	50	50	0	200	A*	426
5	Game Design and Development (GDD198926)	3	2	0	0	5	3	70	20	10	70	25	0	25	150	A*	325
6	IOT and Applications (IOT198927)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A	426
7	System Security (SYS190818)	3	2	0	0	5	3	70	20	10	70	50	0	25	175	A	325
8	Entrepreneurship Development (EDC198928)	3	0	0	0	3	0	0	0	0	0	50	0	50	100	M	303
	TOTAL	24	18	0	0	42	No. of Papers= 06		120	60	420	375	100	250	1325		24/18/42
	TOTAL PERIODS= 42								TOTAL MARKS= 1325								

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department | Controller of Examination | Secretary CDC | Principal

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400 056

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

LIST OF AWARD WINNING COURSES

PROGRAMME: COMPUTER ENGINEERING

SEMESTER: V & VI

w.e.f. Batch admitted in June, 2019 (Progressively)

SR. NO.	COURSE NAME (CODE)	SCHEME OF INSTRUCTIONS AND PERIODS PER WEEK					THEORY PAPER DURATION AND MARKS (ESE)		EXAMINATION SCHEME AND MAXIMUM MARKS							Gr	SCHEME L/P/Cr
		L	P	D	T	Cr (L+P+D+T)	Hrs	Mks	SSL	TA	TH	TW	PR	OR	TOTAL		
1	# Network Administration (NWA198921)	2	4	0	0	6	3	70	20	10	70	50	0	50	200	A*	246
2	#Embedded System (EMS190811)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
3	**# Elective - I (Any One)**																
3.1	Python for Hardware Applications (PHA190807)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
3.2	Linux Administration (LXA190808)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
3.3	Mobile Computing (MCC190809)	3	2	0	0	5	3	70	20	10	70	50	0	50	200	A*	325
4	# Database Administration (DBA190810)	3	2	0	0	5	3	70	20	10	70	50	0	50	200	M*	325
5	# Software Testing and Tools (STT190814)	3	2	0	0	5	3	70	20	10	70	50	50	0	200	A*	325
6	# Advanced Network Administration (ANA190815)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
7	# Project (PRO190816)	0	6	0	0	6	0	0	0	0	0	50	0	50	100	A*	066
8	**# Elective - II (Any One)**																
8.1	Cloud Application Development (CLD198924)	4	2	0	0	6	3	70	20	10	70	50	0	50	200	A*	426
8.2	Data ware Housing & Mining (DWM198925)	2	4	0	0	6	3	70	20	10	70	50	0	50	200	A*	246
8.3	Hacking Techniques & Ethics (HTE190817)	4	2	0	0	6	3	70	20	10	70	50	50	0	200	A*	426
	TOTAL	**23**	**22**	**0**	**0**	**45**	**No. of Papers =07**		**140**	**70**	**490**	**400**	**150**	**250**	**1500**		**23/22/45**
	TOTAL PERIODS= 45								**TOTAL MARKS=**						**1500**		

Theory and Practical periods of 1 Hour duration each. * Compulsory, # Award Winning, @ Online Examination, L- Lecture, P- Practical, D- Drawing Practice, T- Tutorial, Cr- Credit, ESE-End Semester Examination, SSL- Sessional, TA-Teachers Assessment, TH-Theory, TW- Term Work, PR- Practical, OR- Oral, Gr- Group, B- Basic, C- Core, A- Application, M- Management, TA- Based on Attendance, MCQ/Seminar/Mini Project/Assignment/Model Making etc. PR/OR- Assessed by Internal and External Examiners Jointly, TW- Assessed by Internal Examiner Only.

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400 056.

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
Vile Parle (W) Mumbai-400056

Programme: COMPUTER ENGINEERING **With effect from June, 2019**

Credit Summary for 2019 Scheme

Gr	SEMESTER I		SEMESTER II		SEMESTER III		SEMESTER IV		SEMESTER V		SEMESTER VI		Total
	C	O	C	O	C	O	C	O	C	O	C	O	
B	18	0	20	0	0	0	0	0	0	0	0	0	38
C	13	0	11	0	23	11	17	0	0	0	0	0	75
A	0	0	0	0	0	0	11	10	17	10	28	11	87
M	0	0	0	0	0	0	0	0	5	6	0	3	14
Total	31	0	31	0	23	11	28	10	22	16	28	14	214
	31		31		34		38		38		42		214

C- Compulsory, O-Optional, Gr -Group, B -Basic, C - Core, A -Application, M -Management

Head of Department

Controller of Examination

Secretary CDC

Principal

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
Vile Parle (W) Mumbai-400056

Programme: COMPUTER ENGINEERING **With effect from June, 2019**

Credit Summary

Group	Max. Credit	Compulsory Credit	Optional Credit	Remark
B = Basic	38	38	0	
C = Core	75	64	11	
A= Application	87	56	31	
M = Management	14	5	9	
Total	**214**	**163**	**51**	

Compulsory Credit : 163

Optional Credit : 51

TOTAL CREDIT : 214

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
Vile Parle (W) Mumbai-400056

Programme: COMPUTER ENGINEERING

With effect from June, 2019

RATIO OF THEORY : PRACTICAL

Total Theory Credits Offered		Total Practical Credits Offered	Theory :	Practical
110		98 + 06(Inplant Training)	51%	49%
Total Theory Credits (Award Winning)		Total Practical Credits (Award Winning)		
23		22	51%	49%
Total TH/SSL Exam Marks for Offered Courses		Total TA/TW/PR/OR Exam Marks for Offered Courses		
2880		3620	44%	56%
Total TH/SSL Exam Marks for Award Winning Courses		Total TA/TW/PR/OR Exam Marks for Award Winning Courses		
630		870	42%	58%

	Total Credits/Marks offered					Award Winning Credits/Marks			
Semester	Theory Credits	Marks	Practical Credits	Marks		Theory Credits	Marks	Practical Credits	Marks
Semester I	16	360	15	565		0	0	0	0
Semester II	18	450	13	500		0	0	0	0
Semester III	18	540	16	485		0	0	0	0
Semester IV	18	540	20	585		0	0	0	0
Semester V	16	450	22	700		12	360	10	440
Semester VI	24	540	18	785		11	270	12	430
Total	**110**	**2880**	**98 + 06(Inplant Training)**	**3620**		**23**	**630**	**22**	**870**

Head of Department **Controller of Examination** **Secretary CDC** **Principal**

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC ★ MUMBAI 400 056.

PROGRAMME - DIPLOMA IN COMPUTER ENGINEERING

SAMPLE PATH ENTRY LEVEL 10+

Nature of Course	First Year		Second Year		Third Year		Total
	Odd Term	Even Term	Odd Term	Even Term	Odd Term	Even Term	
Compulsory	EMT198901 (05) EMT	AMT198908 (05) AMT	FCN190803 (06) FCN	FOS198916 (06) FOS	NWAI98921 (06) NWA	STT190814 (05) STT	
	APH198902 (05) APH	EVS198909 (02) EVS	DEX198913 (05) DEX	MBS190806 (05) MBS	EMSI90811 (06) EMS	ANA19081S (6) ANA	
	CMS198903(04) CMS	DLS198911 (03) DLS	CPP198914 (06) CPP	DBS198917 (05) DBS		PRO190816 (6) PRO	
	ENG198904(04) ENG	BEX190911 (05) BEX	DST198915 (06) DST	PRP198918 (06) PRP			
	FCS198905(04) FCS	PRC198912 (06) PRC	SPR190804 (05) SPR	HCI198919 (05) HCI			
	CWP198906 (03) CWP	BEE190801 (05) BEE	EUP190805 (06) EUP	CGR198920 (05) CGR			
	WSD198907 (06) WSD	PCA190802 (5) PCA		SPT190819 (06) SPT			
Total credits	**31**	**31**	**34**	**38**	**22**	**04**	**157**
Elective	---	--		--	Any **ONE** from **Elective: I**: 1. PHA190807PHA (5) 2. LXA190808 LXA (5) 3. MCC190809 MCC (5) 4. DBAI90810 DBA (5) 5. PHPI98922 PHP (6) 6. SDM190812 SDM (6) 7. TWT190813 TWT (2) 8. IPP 198923 IPP (2)	Any **ONE** from **Elective: II**: 1. CLD198924CLD(6) 2. DWM198925 DWM (6) 3. HTE190817 THE (6) 4. GDD198926**GDD (5)** 5. IOT198927 IOT (6) 6. SYS190818 SYS (5) 7. EDCI98928 EDC (3)	
Total Credits (Elect.)	**---**	**---**	**03**	**--**	**09**	**31**	**43**
Total Courses	**07**	**06**	**07**	**07**	**07**	**06**	**40**
Total Credits (Comp+Elect.)	**31**	**34**	**36**	**33**	**31**	**35**	**200**
Grand Total of Credits							**200**

1. COURSE DETAILS

Programme: CSE / IT	**Semester: I**
Course: Engineering Mathematics	**Group: B***
Course Code:EMT198901	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	-	-	2	5	3	70	20	10	70	25	-	-	125

3. COURSE OBJECTIVE

This course intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyses engineering problem and as such down foundation for the understanding of engineering and core technology subject and Understand basic facts of mathematics in the field of analysis – algebra, trigonometry, functions, Limits.

4. SKILL COMPETENCY

The aim of this course is to help the student to attain the following industry identified Competency through various teaching learning experiences:

1. Solve broad-based Engineering problems using the Basic Knowledge of mathematics

5. COURSE OUTCOMES (COs) at the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Apply the concepts of algebra to solve engineering related problems.	Understand, Apply
2	Utilize basic concepts of trigonometry to solve elementary engineering problems.	Remember, Understand, Apply
3	Solve problems based on Determinates and Matrices.	Understand, Apply
4	Study the concept of function and limits and apply them into engineering	Remember, Understand, Apply

6. COURSE CONTENTS

Sr No.	TOPIC / Sub-Topics	Hours	Marks	COs
1	**Logarithm** 1.1 Concept 1.2 Basic Laws of logarithm (without proof)	05	08	CO1
2	**Partial Fraction** 2.1 Introduction: Proper and improper fractions 2.2 Type 1: Non-repeated linear factor 2.3 Type 2: Repeated linear factor 2.4 Type 3: Irreducible quadric factor	07	12	CO1
3	**Trigonometry** 3.1 Trigonometric ratios of Compound, allied, multiple and sub-multiple angles (without proofs) 3.2 Factorization and de-factorization formulae (without proofs) 3.3 Inverse Trigonometric function 3.4 Principal values and Relation between Trigonometric and inverse Trigonometric ratio.	12	16	CO2
4	**Determinates & Matrices** 4.1 Revision: determinates of 2 x 2 order 4.2 Value of determinates of 3 x 3 order 4.3 Cramer's rule to solve three unknowns 4.4 Area of triangle, collinear points 4.5 Introduction to Matrices 4.6 Algebra of Matrices 4.7 Transpose, Adjoint and Inverse of Matrices 4.8 Solution of simultaneous equation by Matrix inversion method. (2 and 3 unknowns)	12	14	CO3
5	**Function** 5.1 Definition and Introduction 5.2 Simple Numerical based on concept of function 5.3 Odd and Even Function	05	08	CO4
6	**Limits** 6.1 Definition and Introduction 6.2 Concepts of limits 6.3 Limits of algebraic, trigonometric, exponential and logarithmic functions	07	12	CO4
	TOTAL	**48**	**70**	

7. LIST OF ASSIGNMENTS/TUTORIALS

Term Work consists of Assignments containing minimum no of 06 tutorials.

Sr. No.	Title of Assignments/Tutorial	Approx. Hrs required	COs
1	Solve simple problems of Logarithms based on laws and rule of change of base	4	CO1
2	Resolve into partial fraction using linear non-repeated, repeated factors and irreducible quadratic factor	4	CO1
3	Solve problems based on Compound, Allied, multiple and sub multiple angles, factorization and de factorization and Inverse trigonometric functions , principle value	8	CO2
4	Problems based on Determinates and algebra of matrices, transpose, Adjoint of matrix and simultaneous equation by Matrix inversion method.	8	CO3
5	Solve problems on types of function	4	CO4
6	Solve problems based on types of Limits	4	CO4
	TOTAL	**32**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Six number of assignments
3. Home Work Assignment

9. LEARNING RESOURSES

Sr. No.	Title Of Book	Author	Publication
1.	Mathematics for Polytechnic Student	Shri. S. P. Deshpande	Pune Vidyarthi Graha Prakashan, Pune-30
2.	Shri. B.M. Patel Shri J.M. Rawal	Emgineering Mathematics	Nirali Prakashan, Mumbai
3.	G. V. Kumbhojkar	Engineering Mathematics (First year diploma)	Phadke Prakashan, Kolhapur

10. WEB REFERENCES

1. www.mic-mathematics.com
2. www.math.com
3. www.lenerstv.com
4. www.onlinetutorials.com
5. www.archieves.math.utk.edu

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Logarithm		6	2	08
2	Partial Fraction		6	6	12
3	Trigonometry	2	8	6	16
4	Determinates & Matrices		8	6	14
5	Function	2	4	2	08
6	Limits	2	6	4	12
TOTAL		06	38	28	70

R Remembering, U Understanding, A Applying, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mr. Pratik H.Shah	
2	Internal	Ms. Preeti Bokariya	
3	External	Mr. Umang patel	
		Organization: KJ.S College of Engg Vidya vihar, Mumbai	

1. COURSE DETAILS

Programme: CSE/IT	**Semester: I/II**
Course: Applied Physics	**Group: B***
Course Code:APH198902	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	2	-	-	5	1	70@	20	10	70	25	50	-	175

3. COURSE OBJECTIVE

To develop the basic concepts, facts, principles of scientific phenomena in the field of Physics and material properties and Applications

4. SKILL COMPETENCY

1) Use measuring instruments like Vernier calliper and micrometer screw gauge
2) Apply the theoretical knowledge in the domains of light, sound, heat for solving related numerical.
3) Gain the much needed understanding of how the principles of physics apply to our everyday life.

5. COURSE OUTCOMES (COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Define various physical measurements and units	Remember, Understand, Apply
2	Summarize elasticity and calculate constants of elasticity of any material	Remember, Understand, Apply
3	List and observe the properties of light	Remember, Understand, Apply
4	Articulate the concept of sound, velocity of sound and its application	Remember, Understand, Apply
5	Apply the concepts of electrostatics and magnetism to AC circuit	Remember, Understand, Apply
6	Comprehend the concept of photo electricity and solve numericals	Remember, Understand, Apply

6. COURSE CONTENTS

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
1	**General Physics** 1.1Physical Measurements and Units 1.1.1 Fundamental Physical quantities, examples. 1.1.2 Derived physical quantities, examples. 1.1.3 Definition and requirements of unit 1.1.4 System of units, C. G. S., M. K. S. and S. I. units. 1.1.5 Rules to write the unit and conventions of Units and numerical. 1.1.6 Error – Definition, types of errors and minimization of errors. 1.2.Elasticity 1.2.1. Elastic limit, Hooke's law. 1.2.2 Types of deformation, definitions of Bulk, Rigidity and Young's modules, 1.2.3. Determination of "Y" by Searle's method, behavior of a wire under continuously increasing stress, yield point, Breaking stress,	10	15	CO1 CO2
2	**Properties of light and Fiber Optics** 2.1. Reflection, refraction, Snell's law, physical significance of refractive index definition of dispersion, 2.2. Polarization and diffraction of light along with ray diagram, principle of superposition of waves, interference of light, constructive and destructive interference. 2.3. Total internal reflection; wave guide for light	7	10	CO3
3	**Sound** 3.1.Sound as a longitudinal wave, equation of a progressive wave, Newton's formula for velocity of sound, 3.2. Laplace's correction, effect of temperature, pressure and humidity on velocity of sound, resonance tube, application in brief. 3.3.Ultrasonic waves & their application	7	10	CO4
4	**Electrostatics** 4.1. Coulomb's inverse square law, unit charge electric field, intensity of electric field, 4.2. Definition and properties of electric lines of force, electric flux, electric flux density relation between flux density and intensity, electric flux due to a given charge. 4.3. Electric potential, potential difference, difference absolute potential at a point. 4.4. Capacitance principle of capacitor, capacitors in series and parallel.	10	15	CO5

5	**Magnetism and AC circuits** 5.1.Concept of magnetic field, Oersted's Experiment 5.2. Biot-Savart's law, Force on a current carrying conductor in a uniform magnetic field, forces between two parallel current carrying conductors, 5.3.Magnetic field lines, Magnetic field intensity, Permeability ,Relation between B and H, Alternating currents ,LCR in AC circuits ;RMS value in AC circuit	8	12	CO5
6	**Photo Electricity** 6.1. Concept of photon, Plank's hypothesis, properties of photon, photo electric effect, Characteristics of photoelectric effect, work function, 6.2. Einstein's photoelectric equation(no derivation), 6.3. photoelectric cell-construction, working and applications. (Numericals on Energy of photon, work function)	6	08	CO6
	TOTAL	**48**	**70**	

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 8 experiments

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	Cos
1	Know your Physics Lab	2	CO1
2	Use of Vernier Callipers and Micrometer screw gauge	2	CO1
3	Determination of Young's Modulus by Searle's method.	2	CO2
4	Determination of Refractive index of prism by minimum deviation – Pin method.	2	CO3
5	Determination of Velocity of sound by Resonance Tube.	2	CO4
6	Determination of elastic constants by Searle's method	2	CO2
7	Use of Potentiometer (Principle, Comparison of e.m.f.s of Cell, Calibration of Voltmeter).	2	CO5
8	Plot a graph for charging and discharging of capacitors	2	CO5
9	Calculate the RMS value in AC circuit	2	CO5
10	Study of photocell	2	CO6
	TOTAL	**20**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Practicals
3. Guest/Expert lectures
4. Demonstrations/Simulations
5. Slides
6. Self-Learning Online Resources

9. LEARNING RESOURSES

Sr. No.	Title Of Book	Author	Publication
1.	Applied Physics for Polytechnic	B.G. Dhande	Pune(Pund Vidharathi)
2.	Applied Physics	B.G. Bhandarkar.	Nirali Publications
3.	Engineering Physics	R.K.Gaur and S.L.Gupta	Dhanpat Rai Publication
4	Applied Physics	Umrani, Joshi and Deshpande	Nirali Publications
5	Physics-I	V. Rajendran Tata McGraw- Hill raw	Hill, publication, New Delhi

10. WEB REFERENCES

1. www.physicsclassroom.com
2. http://physics.about.com
3. www.khanacademy.org
4. www.howstuffworks.com

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	General Physics	4	3	8	15
2	Properties of light and Fiber Optics	3	3	4	10
3	Sound	3	4	3	10
4	Electrostatics	3	6	6	15
5	Magnetism and AC circuits	4	4	4	12
6	Photo electricity	2	4	2	08
TOTAL		**21**	**24**	**25**	**70**

R Remembering, U Understanding, A Applying, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs.The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs. Swapna Naik	
2	Internal	Ms. P.P. Bokariya	
3	Internal	Mrs. Abhilasha More	
4	External	MANOJ JAISWAR Organization: SHRI. T. P. BHATIA JR College	

1. COURSE DETAILS

Programme: CSE/IT	**Semester: I/II**
Course: Communication Skills	**Group: B***
Course Code:CMS198903	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	-	-	1	4	3	70	20	10	70	25	-	-	125

3. COURSE OBJECTIVE

Language is the most effective medium of self-expression in personal, social and professional spheres of human life. A student must have a fair knowledge of English language and skills to communicate effectively to handle the future jobs in industry. The objective of this subject is to enable the students to acquire proficiency in oral and written language. The student will be able to develop comprehension skills, improved vocabulary, use of proper grammar and writing skills in English.The language laboratory can be used as a technological aid for the language learning process.

4. SKILL COMPETENCY

1. Identify communication goals.
2. Select the most appropriate and effective medium for communicating.
3. State ideas clearly.
4. Listen attentively.

5. COURSE OUTCOMES (COs)

At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Understand the process of communication	**UNDERSTAND**
2	Learn the various grammatical structures which will enhance oral and written communication	**REMEMBER, UNDERSTAND**
3	Will be proficient in all four language skills (LSRW) Listening, speaking, reading, writing	**UNDERSTAND**
4	Acquire proficiency in spoken English by using language lab.	**APPLY**
5	Communicate effectively in writing and verbal forms	**APPLY**

6. COURSE CONTENTS

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
1	**Basics of Communication** 1.1. Nature & Definition of communication skills 1.2. Process/ cycle of communication. 1.3. Characteristics of communication 1.4. Objectives of communication	4	07	**CO1**
2	**Methods of Communication** 2.1. Verbal & Non-verbal 2.2. Formal and Informal 2.3. Oral & written Communication	4	08	**CO2**
3	***Language Grammar*** 3.1. Tense & its Types 3.2. Parts of speech 3.3. Degree and Its types 3.4. Use of model Auxiliary	8	10	**CO2**
4	**Barriers to Communication** 4.1. Definition of Barrier 4.2. Types of barriers of communication Mechanical, Psychological, Linguistic, socio-cultural & Environmental etc. 4.3. Elimination / Removal of barrier	4	08	**CO1**
5	**Non-verbal Communication and Body Language:** *5.1 Forms of non-verbal communication* 5.2 Interpreting body language cues 5.3 Kinesics; Proxemics; Chronemics 5.4 Effective use of body language	4	07	**CO1**

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
6	**Letter Writing** 6.1. Importance of business communication 6.2 7Cs of Good writing 6.3 Formal, informal and semi-official letter 6.4 business letters.	7	10	**CO5**
7	**Paragraph Writing** 7.1Construction of short and simple descriptive paragraphs about people, places and events 7.2 Summarization of your favourite book.	5	06	**CO5**
8	**Reading Comprehension** 8.1.Reading Unseen passages for comprehension 8.2 Comprehending the newspaper or current affair article	5	06	**CO3**
9	**Listening Skills** 9.1 Listening as an active skill 9.2 Types of Listeners 9.3 Listening for general content 9.4 Listening to fill up information 9.5 Intensive Listening 9.6 Listening for specific information 9.7 Developing effective listening skills 9.8 Barriers to effective listening	3	04	**CO4**
10	**Presentation Skills** 10.1 Oral presentation and public speaking skills 10.2 Situational conversation (at a bank, at doctor's clinic, corporate office, with faculty etc.)	4	04	**CO3**
	TOTAL	**48**	**70**	

7. LIST OF ASSIGNMENTS min 10 assignments

Sr. No.	Title of Assignment	Approx. Hrs required	COs
1	Explain the process of communication with the help of diagram. Give some real life examples, functioning in the similar way.	1	CO1
2	Explain the four types of sentences, Give at least two examples of each.	1	CO2
3	List down the relationship between the clause and sentence, give an example of it.	1	CO2
4	Find out any twenty difficult words from the English newspaper and understand their meaning by using dictionary and use it in your own sentences.	3	CO3
5	Listen and repeat the recorded pronunciation of the given group of words (#)	1	CO4

6	Read the given passage and record it in your own voice the check the correctness of pronunciation. (#)	1	CO4
7	List down the points related to non-verbal communication to be remembered while walking for an interview, and on the stage.	1	CO1
8	Collect the resume of an eminent personality (like scientist, social worker, industrialist or renown politician) an prepare a speech introducing him / her.	2	CO3
9	Explain the Various formats of letter writing and give an examples of each.	1	CO5
10	Develop the paragraph on the given topic.	2	CO5
11	List down examples for different type of tenses	1	CO2
12	Listen the recorded speech on particular topic, and try to imitate the pronunciation by following intonation and rhythm. (#)	1	CO5
	TOTAL	**16**	

Note:

1. Each student has to attempt any ten assignments.
2. # marked are compulsory assignments to be conducted in Language Lab

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Conducting lectures as per teaching plan/ scheme
2. Conducting Tutorials
3. Guidelines for explaining the techniques of essay/dialogue writing
4. Grammar items are covered along with the units of lessons
5. Home assignments & class room participation
6. Self-Learning Online resources

7 Language Lab

8 *Guest/Expert Lecture*

9. LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication
1.	COMMUNICATION SKILL FOR TECHNICAL STUDENT	SOMAIYA	SOMAIYA PUBLICATIONS.
2.	DEVELOPING COMMUNICATION SKILL	KRISHNA MOHAN	MAC MILLAN ND
3.	BUSINESS COMMUNICATION SKILL FOR ENGINEERS	RAI & RAI	HIMALAYA PUBLICATIONS MUMBAI
4.	A COURSE IN COMMUNICATION SKILLS	*DOTOR ASPHI*	*SHETH* PUBLICATIONS.
5.	COMMUNICATION SKILLS	SEN LEENA	PRENTICE HALL OF INDIA NEW DELHI
6.	COMMUNICATION SKILLS	SAMPSON, EAPEN	N P PUBLICATIONS

10. WEB REFERENCES

1. https://www.selfgrowth.com/comm.html
2. http://www.skillsyouneed.com/general/communication-skills.html
3. http://www.helpguide.org/mental/effective_communication_skills.htm
4. http://science.uniserve.edu.au/projects/skills/jantrial/communication/communication.htm

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Basics of Communication	4	3	-	7
2	Methods of communication	4	4	-	8
3	Language Grammar	2	-	8	10
4	Barriers to communication	4	4	-	8
5	Non-verbal Communication & Body Language	2	5	-	7
6	Letter writing	2	-	8	10
7	Paragraph writing	-	-	6	6
8	Reading comprehension	-	-	6	6
9	Listening Skills	4	-	-	4
10	Presentation Skills	-	4	-	4
TOTAL		22	20	28	70

R Remembering, U Understanding, A Applying, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Radhika Patwardhan	
2	Internal	Prachi Arora	
3	Internal	Geetha S.	
4	External	Shweta Salian Organization : Mithibai College	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056

1. COURSE DETAILS

Programme: IT/CSE	**Semester: I/II**
Course: Engineering Graphics	**Group: B***
Course Code: ENG198904	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
2	2	--	--	4	--	--	--	--	--	50	--	50	100

3. COURSE OBJECTIVE

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.

4. SKILL COMPETENCY

Students will be able to

1) To draw various objects by using CAD commands,
2) Construct scales, curves, loci of points, orthographic and isometric projection

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1.	Use different CAD commands for drawing.	Apply
2.	Construct engineering scales, curves and Loci of points.	Understand
3.	Draw orthographic projection and isometric projection of given engineering components.	Remember
4.	Draw various types of planes.	Remember

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	COs
1	**Drawing Instruments and their uses** 1.1. Letters and numbers (single stroke vertical), 1.2. Convention of lines and their applications, 1.3. Scale (reduced, enlarged & full size) plain scale and diagonal scale, Sheet layout, 1.4. Introduction to Computer Aided Drafting (Basic draw and modify Command), Geometrical constructions. 1.4. Introduction to Computer Aided Drafting (Basic draw and modify Command), Geometrical	05		**CO1**
2	**Engineering curves & Loci of Points** 2.1. To draw an ellipse by: Directrix and focus method, Arcs of circle method 2.2. To draw a parabola by: Directrix and focus method, Rectangle method, 2.3. To draw a hyperbola by: Directrix and focus method, passing through given points with reference to asymptotes, Transverse Axis and focus method, 2.4. To draw involutes of circle & polygon 2.5. To draw a cycloid, epicycloids, hypocycloid, 2.6. To draw Helix & spiral, 2.7. Loci of Points: Loci of points with given conditions and examples related to simple mechanisms.	10		**CO2**
3	**Planes** 3.1. Lines inclined to one reference plane only and limited to both ends in one quadrant, 3.2. Projection of simple planes of circular, square, rectangular, rhombus, pentagonal, and hexagonal, inclined to one reference plane and perpendicular to the other.	05		**CO4**
4	**Orthographic projections** 4.1. Introduction to Orthographic projections, 4.2. Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only), 4.3. Dimensioning technique as per SP-46	06		**CO3**
5	**Isometric projection** 5.1. Isometric scale, Conversion of orthographic views into isometric View/projection (Simple objects) 5.2. Projection of Straight Lines and Planes (First Angle Projection Method only)	06		**CO3**
	TOTAL	**32**		

7. LIST OF PRACTICALS/DRAWINGS

Term Work consists of Journal containing minimum no of 10 experiments/Assignments with approx.no of hours required.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	COs
1.	To Perform CAD Commands: Part1	02	**CO1**
2.	To Perform CAD Commands: Part1	02	**CO1**
3.	To Draw different types of scales	04	**CO2**
4.	To Draw different types of Dimensions	02	**CO1**
5.	To Draw different types of Engineering Curves	04	**CO2**
6.	To Draw Loci of Point	04	**CO2**
7.	To Draw Projection of Points, Straight Lines and Planes.	02	**CO4**
8.	To Draw Orthographic Projection of Pictorial View.	02	**CO3**
9.	To Draw Isometric Projection.	02	**CO3**
10.	To Demonstrate Working of 3D Printer	02	**CO3**
11	Assignment 1 : Projection of Planes	02	**CO4**
12	Assignment 2 : Orthographic Projection	02	**CO3**
13	Assignment 3: Isometric Projection	02	**CO3**
	Total	32	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan.
2. Minimum no of practical/assignments/drawings etc.
3. Demonstrations and Simulations
4. Slides
5. Self-Learning Online Resources

9. LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication
1	Engineering Drawing	N. D. Bhatt-	Charotar Publishing House
2	Engineering Drawing and Graphics+ AutoCAD	K. Venugopal-	New Age Publication
3	Technical Drawing with Engineering Graphics	Frederick Giesecke, Cindy Johnson JJohnson	Pearson Education
4	Technical graphics communications	Gary Bertoline, William Ross	McGraw-Hill Higher Education

10. WEB REFERENCES

1. https://knowledge.autodesk.com/support/autocad/getting-started?sort=score
2. http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html
3. http://www2.ivcc.edu/perez/what_what_is_an_engineering_draw.htm
4. https://thesourcecad.com/autocad-tutorials/

11. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	**Neha More**	
2	Internal	**Pankaj Rathod**	
3	Internal	**Rupali Pawar**	
4	External	**DR. Rajesh Patil** Organisation: **Mukesh Patel School Of Technology Management & Engineering**	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC ★ MUMBAI 400056

1. COURSE DETAILS

Programme: IT/CSE	**Semester: I**
Course: Fundamentals of computing System	**Group: C***
Course Code: FCS198905	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
02	02	-	-	04	-	-	-	-	-	50	50	-	100

3. COURSE OBJECTIVE

This subject envisages making the students know the fundamentals of computer systems and its organization. It will enable the students to comprehend the organization and working of various units of personal computer system for storing and processing information. It will also help the students to have hands on experience of operating systems and different application software used for office automation, day to day problems sharing in particular for creating business documents, data analysis graphical representations and business presentations. It also deals with basics of Internet technology available services internet connectivity and accessing information on internet.

4. SKILL COMPETENCY

i. **Understand the fundamentals of operating systems and computer network**
ii. **Utilization of Documents, Presentations & Spreadsheets**
iii. **Use of Internet & utility apps.**

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	**Outline the concepts of operating systems and networking.**	**Remember, Understand**
2	**Utilize various commands to prepare documents, spreadsheets presentations by processing and analyzing the data and store the data.**	**Understand, Apply**
3	**Demonstrate the use of internet, email etiquettes and internet ethics.**	**Remember, Understand**
4	**Explain the use of various banking and utility apps.**	**Understand**

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	COs
1	**Introduction to computer and Operating Systems** 1.1 General Structure of computer systems. 1.2 Introduction to operating system. 1.3 Functions of operating system 1.4 Types of Operating system 1.5 Examples of Desktop OS and Mobile OS 1.6 Introduction to Linux	5		CO1
2	**Introduction to Computer Network** 2.1. Fundamentals of Network system- Wired & Wi-Fi network. 2.2. Network Goals, Devices, Topologies, Cables and connectors, Addressing. 2.3. Desktop updates and viruses. 2.4. Awareness of security policies in handheld devices.	5		CO1
3	**Introduction to Documents, Spreadsheets & Presentations** 3.1. Introduction to Documents 3.1.1. Starting Word Document ; Typing and Editing text, Copying and Moving, Typing Special Characters (Symbols); 3.1.2. Some common features : Changing the case of text, Moving & copying text with drag and drop, Justifying text, inserting bulleted & numbered lists , 3.1.3. Arranging and moving between open documents; Finding and replacing, 3.1.4. Formatting ; Using the spell checker , Checking grammar, mail merging	5		CO2
	3.2. Concepts of POWER POINT 3.2.1. How to make an effective presentation, Physical aspects of presentation ; A Presentation Graphics package 3.2.2. Creating a presentation : creating a Title slide, Creating a Graph, Creating Tables, Make Organization Chart, To Save and close presentation; 3.2.3. Working with Tools: Create, Edit, Move, Delete, Resize, Format text object, 3.2.4. Working with Graphics tools; Slide show	2		CO2
	3.3. Fundamentals of Spreadsheets 3.3.1. What is a spreadsheet, creating & editing spreadsheet, modifying the sheet? 3.3.2. Study of Toolbars, Formula bar and Status bar. 3.3.3. Inserting Header and columns, worksheet, formatting individual cells row, column, sheet, manipulating Data by using Sort. 3.3.4. Saving and Retrieving saved worksheet.	4		CO2

4	**Introduction to INTERNET** 4.1. Concept- INTERNET, intranet, client-server architecture. 4.2. Application of INTERNET: E-mail, online shopping, reservations, e-commerce 4.3. Introduction to accessing GPS, Google Map. 4.4. Study of INTERNET Browsers, Creating mailing account, Surfing using WORLD WIDE WEB information relating to employment, education, alumni, social networking. 4.5. Internet ethics and rules- Ethics for everyone and acceptance, sensitivity to national & local cultures, hide personal information, ethical rules for computer users, cyber laws	5		CO3
5	**Introduction to Digital Era** 5.1 What is digital era? 5.2 Introduction to e-commerce & e-governance websites 5.3 Introduction to banking applications 5.4 Features of banking application 5.5 Security risks involved in internet banking & mobile banking 5.6 Use of Mobile wallets 5.7 Utility Apps on mobile Eg: UTS, M-indicator, OLA, Zomato,etc. 5.8 Introduction to DigiLock	6		CO4
	TOTAL	**32**		

7. LIST OF PRACTICALS/ASSIGNMENTS

Term Work consists of Journal containing minimum no of 10 experiments with approx.no of hours required and corresponding CO attained are specified here.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	COs
1	To perform network commands ipconfig, ping, netconfig etc. and draw the network architecture and topologies.	02	CO1
2	To perform basic commands of Linux	04	CO1
3	Getting started with Windows by using different menus and working with dialogue box and Working of Control panel, Screen saver and Help commands.	02	CO2
4	i) Using tool bar menus like Standard , Formatting , Tables and Borders ii) Creating, Editing and Saving a document , Table using Word package iii) Creating Document with Table, editing using special characters & saving. iv) Creating multiple documents/letters/envelopes using mail-merge.	02 02	CO2
5	Performing functions spell check, find, replace, go to, page setup,	02	CO2

	print preview and print commands, custom sort, macros, use of filters.		
6	i) Creating a new presentation and getting acquainted with various menus like FILE, EDIT, VIEW, INSERT, FORMAT, TOOLS, SLIDESHOW ii) Choosing Auto Layout and working with tools and to prepare a slide show with custom animation iii) To Perform special effects, clipart, charts using one slide show demonstration	02 02	CO2
7	i) Creating Spread Sheet for various combinations of computational tables, various types of charts. ii) Using various functions, formulas, preparing spreadsheets using pivot table iii) Working with macros.	02 02	CO2
8	Creating an internet account, Internet terms, and study of mailing, Software to send & receive mail.	02	CO3
9	Use of Internet explorer package, search Engine & retrieve education related information and downloading procedure	02	CO3
10	Installation of any one mobile utility app and listing its features	02	CO4
11	Case study on Mobile banking security breach.	04	CO4
	Total	**32**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical
3. Slides
4. Case Study
5. Self-Learning Online Resources

9. LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1.	**Introduction to Information Technology**	**ITL Education Solutions LTD**	**Pearson Education**
2.	**Foundations of digital government- Leading and managing in the digital era**	**Daniel Viet Jan Huntgeburth**	**Springer**

10. WEB REFERENCES

1. https://www.javatpoint.com/ms-word-tutorial
2. https://www.guru99.com/introduction-to-microsoft-excel.html
3. https://www.javatpoint.com/powerpoint-tutorial
4. https://www.worldatlas.com/articles/what-was-the-digital-revolution.html

11. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs. Radhika Patwardhan	
2	Internal	Mrs. Rupali Pawar	
3	Internal	Mrs. Abhilasha More	
4	External	MR. VAIBHAV M. PALVE Organization: SVP BORIVALI, MUMBAI	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056.

1. COURSE DETAILS

Programme: CSE/IT	**Semester: I/II**
Course: Workshop and Practice (CSE/IT)	**Group: C***
Course Code: CWP198906	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks								Gr	Scheme
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL		L/P/Cr
					Hours	Marks									
1	2	-	-	3	-	-	-	-	--	50	-	50	100	C*	123

3. COURSE OBJECTIVE

This course impart the knowledge of Electronic Components. It provides hands on experience on soldering/ disordering, identifying and assembling the hardware components.

4. SKILL COMPETENCY

As a hardware engineer, student should able to use, identify electronic components and hardware components, various tools to solder/ decoder and assemble a desktop following safety standard practices.

5. COURSE OUTCOMES (COs) at the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Familiarize the electronic components and testing tools.	Remember, Understand
2	Solder and desolder electronic components.	Understand, Apply
3	Identify the hardware components on system board, cables and connectors.	Remember, Understand
4	Assembly and disassembling a Desktop.	Understand, Apply

6. COURSE CONTENTS

Sr.No.	Topics /Sub-Topics	Hours	Marks	COs
1	**Introduction to electronic Components** 1.1 Revision of basic electrical quantities: current, voltage, frequency, power, energy, AC DC 1.2 Basic Units: micro, milli, kilo, mega, gega, tera, bits, bytes, word. 1.3 Active components and passive components definition 1.4 Resistor: Working principle, unit, symbol Basic construction of carbon composition, color coding method, power consumption, testing, applications 1.5 Capacitor: Working principle, unit, symbol Basic construction of capacitor, use of electrolytic and non-electrolytic capacitor, testing, application. 1.6 Inductor: Working principle, unit, symbol, testing, Application, Introduction to self-inductance and mutual inductance. 1.7 Basic of transformer, Working , symbol and Step up and step down transformer 1.8 Diode, LED and transistor (identify measure and use)	3	-	CO1
2	**Soldering and desoldering** 2.1 PCB, 2 layer PCB, General steps in PCB making, use of PCB 2.2 Soldering: solder, Flux, Soldering iron, construction, solder mask, introduction to solder mask Mass soldering techniques : wave, Reflow soldering 2.3 Desoldering tools 2.4 Testing	2	-	CO2
3	**Identifying Desktop components** 3.1 IC packing Advantages of SMT and its applications 3.2 Mother board, layout, types, Cooling system, and introduction to chipsets. 3.3 Processors: use, speed, types, selection. 3.4 Computer Local bus: introduction to ISA and PCI. 3.5 Port: Parallel, serial, USB, network and PS/2. 3.6 Storage Devices: HDD, CDD, Flash drive 3.7 Memory: use, operational frequency 3.8 Display: use, cable and connectors of VGA, HDMI, DVI. 3.9 Network: Use, Cable, Coaxial, UTP, Fiber, speed. 3.10 Cooling system, Power supply: SMPS, Battery.	3	-	CO3

4	**Working with PC components printer and scanners network** 4.1 Adding , removing PC Components 4.2 HDD, FDD, power supply 4.3 Install Printer scanner type 4.4 working with NIC card, audio input output	**3**	-	**CO3**
5	**Assembly and disassembly of Desktops** 5.1 Tools sets 5.2 Selection on motherboard 5.3Assembly of desktop 5.4 Safety Precautions	**3**	-	**CO4**
6	**Installing of Operating system** 6.1 Types of OS 6.2 Pre installing activities 6.3 Steps in OS installation	**2**	-	**CO4**
	TOTAL	**16**		

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 10 experiments with numbers of hours required and corresponding CO attained should be specified here.

1	To Draw and Identify various parts on a typical motherboard	4	CO1
2	solder and desolder electronic components on a PCB	4	CO2
3	To Draw and identify various daughterboard cards	2	CO3
4	To study and draw cables and connectors	2	CO3
5	To demonstrate the internal parts and working of a keyboard	2	CO3
6	To demonstrate the internal parts and working of a mouse	2	CO3
7	To Install Operating System.	4	CO4
8	To demonstrate the internal parts and working of a Hard disk	4	CO3
9	To disassemble and assemble a desktops	4	CO4
10	To install various Input Output Devices in computer System.	4	CO3
	Total	32	

8. IMPLEMENTATION STRATEGY(PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments/drawings etc.
3. Industry visit
4. Guest/Expert lectures
5. Demonstrations/Simulations
6. Slides
7. Self-Learning Online Resources

9. LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1.	Computer Hardware and Networking	Vishnu Singh	Computech Publishers
2.	Production Technology of Electronic Equipment Vol.-I and Vol.-II	NEC , Bengaluru	

10. WEB REFERENCES

1. http://nearsys.com/dissertation/notes.pdf
2. http://www.elecraft.com/TechNotes/N0SS_SolderNotes/N0SS_SolderNotesV6.pdf
3. http://farside.ph.utexas.edu/teaching/302l/lectures/node106.html
4. http://vlab.ee.nus.edu.sg/~bmchen/courses/EG1108_Transformers.pdf

R Remembering, U Understanding, A Applying, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

11. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	**Internal**	**Mr. Janardan Kulkarni**	
2	**Internal**	**Mr. Abhijit Dongaonkar**	
3	**Internal**	**Mr. Siddhesh Masurkar**	
4	**External**	**Mr. Anil Gurav – St. Xavier's Tech. Inst., Mahim, Mumbai**	

1. COURSE DETAILS

Programme: CSE/IT	**Semester: I/II**
Course: Website Designing	**Group: C***
Course Code: WSD198907	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
02	04	-	-	06	3	70	20	10	70	50	50	-	200

3. COURSE OBJECTIVE

The internet based applications are used in various sectors such ticket booking, banking, government agencies etc. This subject gives introduction to client severs programming. It also gives students the practical exposure to widely used web technologies to write web pages.

4. SKILL COMPETENCY

- Develop static webpages.
- Validate web pages using client side scripting language.

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Conceptualize on fundamental terminologies in web designing.	Remember
2	Design web pages using frames, forms, tables, etc.	Understand, Apply
3	Formatting the web pages using style sheets.	Understand, Apply
4	Validate web pages using JavaScript.	Understand, Apply

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	COs
1	**INTRODUCTION TO WEB DESIGNING** 1.1. Use of Internet, Terminologies used in internet, 1.2. Web client-server computing, Client-Server Architecture, various types of server, Types of server, server side coding, client side coding, 1.3. Introduction to Markup languages and Scripting languages, Search Engine 1.4 Principles of web designing 1.5 Planning process of web page designing 1.6 Rules of web Designing 1.7 Introduction to web hosting	3	7	CO1
2	**HTML** 2.1. Introduction to HTML, Components of HTML: Tags – closed tags and open tags, Attributes, Elements, 2.2. Structure Tags: DOCTYPE, HTML, HEAD, TITLE, BODY tags. 2.3. Block Level Elements: Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, reformatted text, Address. 2.4. Text Level Elements: Bold, Italic, Teletype, Underline, Strikethrough, Superscript, subscript, Horizontal Rules, special characters 2.5. Adding comments, The Meta tag. Creating Lists, Ordered Lists, Unordered Lists, Definition Lists, Nested Lists 2.6. Linking HTML Documents URL: Types of URLs, Absolute URLs, Relative URLs, 2.7. The Anchor Tag, Linking : To document in the same folder, To document in the different folder, To document on the web, To specific section within the document	3	7	CO2
3	**IMAGES, COLORS AND BACKGROUND** 3.1. Images Image formats : gif, jpeg, png, The inline image : an IMG tag, alternate text, image alignment, buffer space – HSPACE, VSPACE, wrapping text, height and width of images, Image as a link, 3.2. Image mapping 3.3. Colors and Backgrounds, The text color: color attribute of FONT tag, text attribute of BODY tag, Background color: bgcolor attribute of BODY tag, 3.4. Background images : background attribute of BODY tag, Changing link colors : link, alink, vlink attributes of BODY tag	3	7	CO2

4	**TABLES & FRAMES** 4.1. Tables, Creating basic tables : TABLE, TR, TH, TD tags., Formatting tables: border, cellspacing, cellpadding, width, align, bgcolor attributes, Adding captions : CAPTION tag. , 4.2. Formatting contents in the table cells : align, valign, bgcolor, height, width, nowrap attributes, Spanning rows and coloums : rowspan and colspan attributes. 4.3. Frames: Introduction to frames: What is frame?, Advantages and disadvantages of using frames. Creating frames: FRAMESET tag – rows, cols attributes, FRAME tag –name, frameborder, marginheight, marginwidth, src, resize, scrolling, attributes. Use of NOFRAMES tags Frame targeting.	7	14	CO2
5	**FORMS** 5.1Forms creating basic form: FORM tag, action and method attributes. 5.2 Form fields: Single line text field, password field, multiple line text area, radio buttons, check boxes, Pull down menus: SELECT and OPTION tags.Buttons: submit, reset and generalized buttons. 5.3 Formatting technique: Using table to layout form	4	10	CO2
6	**STYLE SHEETS** 6.1. Adding style to the document: Linking to style sheets, Embedding style sheets, Using inline style. 6.2. Selectors: CLASS rules, ID rules. 6.3. Style sheet properties: font, text, box, color and background properties.	4	10	CO3
7	**INTRODUCTION TO JAVA SCRIPT** 7.1. Embedding JavaScript in HTML document, Variables, Constants, Adding comments, 7.2. Operators: Assignment, Arithmetic and Comparison operators, 7.3. Control structures and looping: if, if...Else, for, for. In, while, do. While, break andcontinue.Event handlers: on Click, onMouseOver, onMouseOut, on Submit, onReset, on Focus, on Blur, on Select.	8	15	CO4
	TOTAL	**32**	**70**	

7. LIST OF PRACTICALS/ASSIGNMENTS/EXERCISES

Term Work consists of Journal containing minimum no of 10 experiments/assignments with approx.no of hours required and corresponding CO attained are specified here.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	COs
1	Describe the terminologies of Internet a. Internet & Intranet b. Client server architecture c. Types of server	02	CO1
2	Illustrate the following concepts of website designing. a. State the Principles of web designing b. State the process of web page designing c. Enlist the Rules of web Designing d. Show the steps of web hosting	02	CO1
3	To create web page to implement block level tags	04	CO2
4	To create webpage to implement text level tags (part 1)	04	CO2
5	To create webpage to implement text level tags (part 2)	04	CO2
6	To link documents using absolute and relative paths. To create web page to display background color & image.	02	CO2
7	To write an HTML code to create tables	06	CO2
8	To create HTML frames and apply various formatting tags	08	CO2
9	To create internal and external style sheet	06	CO3
10	To implement basic concepts of JavaScript.	08	CO3
11	To implement validation programs using JavaScript. a. To use JavaScript functions b. To handle events in JavaScript	08	CO4
12	Mini Project (Website)	10	CO1 to CO 4
	Total	64	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments etc.
3. Guest/Expert lectures
4. Case Study
5. Self-Learning Online Resources
6. Mini Project

9. LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1.	Html & Web Design: Tips & Techniques	Kris Jamsa, Konrad King, Andy Anderson	Tata Mc-graw hill edition
2.	HTML & CSS: The Complete Reference, Fifth Edition	Thomas A. Powell	McGraw Hill Professional
3.	How to do everything with Java Script-	Scott Duffy	McGraw-Hill

10. WEB REFERENCES

1. https://www.w3schools.com/html/
2. https://www.tutorialspoint.com/html/
3. https://www.javatpoint.com/html-tutorial
4. https://www.geeksforgeeks.org/html-tutorials/
5. http://www.echoecho.com/html.htm
6. https://www.javatpoint.com/javascript-tutorial

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Introduction to web Designing	7	-	-	7
2	HTML	-	3	4	7
3	IMAGES, COLORS AND BACKGROUND	-	3	4	7
4	TABLES & FRAMES	-	7	7	14
5	FORMS	-	4	6	10
6	STYLESHEETS	-	4	6	10
7	INTRODUCTION TO JAVASCRIPT	-	6	9	15
	TOTAL	7	27	36	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of Cos. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mr Manish R Solanki	
2	Internal	Mrs Abhilasha V More	
3	Internal	Ms Neha More	
4	External	Mr. Harinder Salwan. Tvcom Multimedia PVT Ltd.	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC * MUMBAI 400056

1. COURSE DETAILS

Programme: CSE/IT	**Semester: II**
Course: Applied Mathematics	**Group: B***
Course Code: AMT198908	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	-	-	2	5	3	70	20	10	70	25	-	-	125

3. COURSE OBJECTIVE

This course intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyses Engineering problem and as such down foundation for the understanding of engineering and core technology subject and Understand basic facts of mathematics in the field of analysis – Derivatives, Statistics, Integration, Numerical Methods, Complex number and Vector.

4. SKILL COMPETENCY

The aim of this course is to help the student to attain the following industry identified Competency through various teaching learning experiences.

1. Solve broad-based Engineering problems using the Basic Knowledge of mathematics.

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Analyse suitable methods to solve derivatives and its application in the field of engineering.	Remember Understand, Apply
2	Apply the concept of numerical methods in computer programming languages.	Understand, Apply
3	Use Basic concepts of Statistics and probability to solve engineering related problems.	Understand, Apply
4	Integrate various expressions using concepts of inverse differentiation, partial function, method of substitution	Remember Understand, Apply
5	Apply the concept of vector to solve problems of work done and force and various operation on Complex numbers.	Remember Understand, Apply

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	COs
1	**Derivatives and its Application** 1.1. Derivatives – basic formulas, rules 1.2. Derivatives for exponential, logarithmic, implicit, inverse, parametric, composite functions. 1.3. Derivative of one function with respect to other 1.4. Double derivative 1.5 Slope of tangent and normal 1.6 Equation of tangent and normal 1.7. Maxima & minima	12	16	CO1
2	**Numerical Methods** 2.1 Solution of algebraic equation using – i) bisectional method ii) Regular-falsi method, iii)Newton-Raphson method 2.2 Solution of simultaneous equation i)Gauss elimination method ii) Jacobi's method iii) gauss-seidal method	07	11	CO2
3	**Probability and statistics** 3.1 Statistic: Measure of central tendency (mean, medium and mode) for un grouped and grouped frequency distribution. 3.2 Graphical representation to find mode a medium. 3.3 measures of dispersion such as range, mean deviation, standard deviation, variance and coefficient of variance. 3.4 Probability: Definition of random experiment, sample space, event, occurrence of event and types of events (Impossible, mutually exclusive). 3.5 Addition and multiplication theorems of probability	05	08	CO3
4	**Integration** 4.1. Basic formulas 4.2. trigonometric, substitution method and Finding last term and solve 4.3. Using LIATE rule 4.4. Partial fraction 4.5. Definite Integrals 4.6. Properties of definite integrals 4.7. Application of definite integration- Area under the curve	12	16	CO4
5	**Complex number** 5.1. Definition 5.2. Simple rules: addition, subtraction, multiplication, division 5.3. De-Moivre's theorem (without proof) 5.4. Roots of complex number 5.5. Euler's Formula	07	11	CO5
6	**Vector** 6.1. Definition Algebra of vectors 6.2. Vector product 6.3. Scalar product 6.4. Work done and moment of force 6.5. Application of vector	05	08	CO5
	TOTAL	48	70	

7. LIST OF ASSIGNMENTS/TUTORIALS

Term Work consists of Journal containing minimum no of 06 tutorials

Sr. No.	Title of Assignment/Tutorials	Approx.Hrs required	COs
1	Solve simple problems based on type , second order and application of Derivatives	12	CO1
2	Basic problems based on Numerical methods	2	CO2
3	Basic statistics and probability based problem	2	CO3
4	Solve problems on basic integration, Different types of integration, Partial fraction integration and application of Integration	12	CO4
5	Solve problems on complex number	2	CO5
6	Solve problems based on vectors	2	CO5
	Total	**32**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. 06 no of assignments
3. Home Work Assignment

9. LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication
1	Mathematics for polytechnic Student II	Shri. S.P.Deshpande	Pune Vidyarthi Graha Prakashan Pune-30
2	Shri. B.M. Patel Shri J.M. Rawal	Applied Mathematics	Nirali Prakashan Mumbai
3	Shri. B.M. Patel Shri J.M. Rawal	Engineering Mathematics	Nirali Prakashan Mumbai
4	G.V. Kumbhojkar	Engineering Mathematics	Phadke Prakasan, Kolhapur

10. WEB REFERENCES

1. **http://tutorial.math.lamar.edu/Classes/Alg/ComplexNumbers.aspx**
2. **http://www.academia.edu/2391781/Numerical_Methods_Solved_Examples**
3. **www.derivative-calculator.net**
4. **www.stattrek.com/statistics/problems.aspx**
5. **https://www.integral-calculator.com**

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Derivatives and its Application	2	8	6	16
2	Numerical method		4	7	11
3	Probability and Statistics		4	4	8
4	Integration	2	8	6	16
5	Complex Number	2	3	6	11
6	Vector	2	2	4	8
	TOTAL	8	29	33	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mr. Pratik H.Shah	
2	Internal	Ms. Preeti Bokariya	
3	External	Mr. Umang Patel	
		Organisation:	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC ★ MUMBAI 400056

1. COURSE DETAILS

Programme: CSE / IT	**Semester: II/I**
Course: Environmental Studies	**Group: B***
Course Code: EVS198909	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
2	--	--	--	2	--	--	--	--	--	50	--	--	50

3. COURSE OBJECTIVE

This course imparts knowledge about renewable and non-renewable natural resources. It raises understanding and appreciation of the concept of ecosystems, biodiversity and conservation. It increases the awareness regarding environmental pollution, climate change, water conservation and environmental legislations.

4. SKILL COMPETENCY

- Students are able to relate to the importance of environmental studies to improve and maintain the quality of human life.
- Have gone through various case studies of ecological disasters and their long term impact on all bio-logical life on earth.
- Learn about how the modern life is consuming natural resources, the related pollutants produced and pressing urgency to find alternative energy sources
- Appreciate the importance of bio diversity and the necessity of conserving the same
- Learn about environmental Legislation and associated laws to protect our earth.

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
CO1	Identify and classify different natural resources and use them prudently.	Remember, Understand
CO2	Recognize and categorize the different ecosystems.	Understand, Apply
CO3	Discuss and estimate the importance of biodiversity and its conservation.	Remember, Understand
CO4	Classify the type of pollution, identify the pollutants and propose and design methods to reduce the same.	Understand, Apply
CO5	Use the information regarding environmental legislation to improve upon their surroundings for the betterment of the community.	Remember, Understand

6. COURSE CONTENTS

Sr. No.	TOPIC / Sub-Topics	Hours	COs
1	**The Multidisciplinary nature of environmental studies** 1.1 Definition, scope and importance 1.2 Need for public awareness	**02**	**CO1**
2	**Natural Resources** 2.1 Renewable and non-renewable resources: Natural resources and associated problems Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forest and tribal people. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. 2.2 Energy Crisis: Energy resources: Renewable Energy Resources – Biogas, Solar energy, Wind energy, Energy from falling water, Energy from wastes and tidal energy. Non-Renewable Energy Resources – Coal, Oil, Natural gas Issue of economic viability and ability to meet demands. Inequitable use of energy in urban and rural areas.	**06**	**CO1**
3	**Ecosystems** 3.1 Concept of ecosystem. 3.2 Major ecosystems in the world	**06**	**CO2**
4	**Biodiversity and its conservation** 4.1 Concepts 4.2 Threats to biodiversity	**06**	**CO3**

5	**Environmental Pollution** 5.1 Definition Cause, effects and control measures of a. Air pollution b. Water pollution c. Soil pollution d. Noise pollution e. Nuclear hazards f. Mobile Hazards - Mobile phone radiation and health 5.2 Types of wastes – generation, characteristics, treatment and disposal of: a. Solid waste b. e- waste c. Biomedical waste	**06**	**CO4**
6	**Social Issues and the Environment** 6.1 From Unsustainable to Sustainable development 6.2 Water conservation, rain water harvesting, watershed management 6.3 Environmental ethics: Issues and possible solutions like Carbon Credit. 6.4 Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. 6.5 Environment legislations. Legal aspects related to environment b. Brief description of various acts involving air, water and forests. c. ISO-14000 d. Issues involved in enforcement of environmental legislation	**06**	**CO5**
	TOTAL	**32**	

7. LIST OF ASSIGNMENTS

Term Work consists of Journal containing minimum no of 08 exercises.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	COs
1	Detailed report on Effect of environmental changes on day to day life.	4	CO1, CO4
2	Study Of Natural & Environmental Disasters World Wide And Their Aftermath(Ex. Eg, Chernonbyl, Bhopal Gas Tragedy, Fukushima)	2-Each	CO1, CO5
3	Detailed report on any Ecosystem and biodiversity after visit or self-study	2-Each	CO2, CO3
4	Using any current headlines regarding Environment make an effective presentation to raise awareness	4	CO5

8. IMPLEMENTATION STRATEGY(PLANNING)

1. Teaching Plan
2. Minimum no of assignments
3. Guest/Expert lectures
4. Video lectures on environment
5. Slides
6. Group discussions

9.LEARNING RESOURSES

Sr. No.	Title of Book	Author	Publication
1.	Text book of Environmental studies	Erach Bharucha	UGC Press
2.	Environmental studies	Rajagopalan	Oxford University Press
3.	Environmental studies	Anandita Basak	Darling Kindersley (India)Pvt Ltd Pearson

10.WEB REFERENCES

1. http://endangered.fws.gov/
2. www.nesarc.org
3. www.stopextinction.com
4. www.audubon.org/campaign/esa/esa.html

11. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs. Swapna Naik	
2	Internal	Mrs. Radhika Patwardhan	
3	Internal	Ms. Sharayu Kadam	
4	External	VIVEK SHANTARAM DHADAM Organisation: SADGURU ELECTRICALS	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056

1. COURSE DETAILS

Programme: CSE/IT	**Semester: I/II**
Course: Development of Life Skills	**Group: B***
Course Code:DLS198910	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
2	-	-	1	3	-	-	-		-	50	-	50	100

3. COURSE OBJECTIVE

Human resource is the most important resource and it should be utilized to the maximum for the organizational growth. This course helps students to develop the soft skill, overall growth of personality by building leadership quality, self-motivation, inter personal skills, ethics, moral values, yoga practices, meditation and stress management.

4. SKILL COMPETENCY:

1. Life Skills development
2. Leadership Quality
3. Interpersonal Skills
4. Decision Making
5. Conflict Management
6. Time Management

5. COURSE OUTCOMES (COs)

At the end of the semester student will be able to:

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Develop self-motivation, self-analysis and emotional stability	**Understand, Apply**
2	Deal with frustration, interpersonal and intrapersonal conflicts in ethical manner	**Remember, Apply**
3	Develop the skills for group discussion, team building and optimum usage of time.	**Understand ,Apply**
4	Manage stress with yoga and meditational techniques	**Understand , Apply**

6. COURSE CONTENTS

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
1	**AREA OF SELF DEVELOPMENT** 1.1 Introduction 1.2 Areas of self-development, 1.3 Self Analysis 1.4 Establishment of good study habits, Prioritize the work, use of library. 1.5 power of concentration	03		CO1& CO4
2	**TIME MANAGEMENT** 2.1 Introduction 2.2 Time planning, how to plan time 2.3 Time wasters , Time Management 2.4 The Matrix etc.	04		CO3
3	**STRESS MANAGEMENT FOR STUDENTS** 3.1 YOGA 3.1.1 Yoga approach and Scientific view 3.1.2 Pranayama: Breath Control, Breath and Postures, Rhythmic Breathing 3.1.3 Relaxation Asanas 3.2 Benefits of Meditation 3.2 .1positive Body Benefits 3.2.2 Positive Mind Benefits – Emotional stability, maturity anxiety control, anger management. 3.2.3Positve effects on society as a whole.	06		CO4
4	**EMOTION** 4.1 Emotional Maturity 4.2 Emotional Stability and Emotional Intelligence /Quotient 4.3 How to control emotions	02		CO1
5	**FRUSTRATION** 5.1 Definition of frustration 5.2 Anatomy of frustration 5.3 Causes of frustration 5.4 Effects of frustration 5.5 Handling of frustration	02		CO2

Sr.No.	TOPIC / Sub-Topics	Hours	Marks	COs
6	**MOTIVATION** 6.1 Introduction to Motivation 6.2 Self-Motivation –Motivational speeches, Quotes, Videos 6.3 Importance of Attitude along with Aptitude.	02		CO1
7	**INTERPERSONAL SKILLS** 7.1 Interpersonal Relations 7.2 Negotiation, Persuasion, Influencing Skills 7.3 Personal effectiveness, Assertiveness/ Non-assertiveness 7.4 empathy	03		CO2
8	**CONFLICT MANAGEMENT** 8.1 Definition of Conflict 8.2 Sources of Conflict 8.3 Types of Conflict 8.4 Conflict Resolution 8.5 Steps in Conflict resolution	02		CO2
9	**SWOT ANALYSIS** 9. SWOT ANALYSIS 9.1 Concept of SWOT 9.2 Scope of SWOT 9.3 SWOT as decision making tool 9.4 How to go about SWOT	03		CO1
10	**GROUP DISCUSSION** 10.1 Importance of Objective of GD 10.2 Procedure for GD 10.3 Evaluation criteria for GD 10.4 Types of Interviews 10.5 Guidelines for interview	02		CO3
11	**TEAM BUILDING** 11.1 Definition of Team 11.2 Importance and necessity in working team 11.3 Team Dynamics 11.4 Transforming Group into Teams 11.5 Task Management- planning and evaluation	03		CO3
	TOTAL	**32**		

7. LIST OF ASSIGNMENTS

(Note: Teacher will do the necessary changes in the assignments as per requirement)

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	COs
1	Identify your areas of self-development and plan strategies to improve it.	1	CO1
2	Enlist your time- wasters. And write down how you use your time on any average day, and see how you can improve time utility.	2	CO3
3	Identify the common situations that make you STRESS. Enlist the after effects of your STRESS	1	CO4
4	Look back in your life and list five occasions, when you were frustrated, Recall the strategies you used to overcome that frustration.	2	CO2
5	What are the things that motivate you (Friendliness, Warmth, Honesty, Appreciation) and Things that De motivate you (rejection, Criticisms, Fear of Failure, insult)	1	CO1
6	Enlist the ten various sources of interpersonal conflicts in students life and Methods to resolve it.	1	CO2
7	Listen to lecturer on particular topic and take down notes and check how good you were in capturing the structure, hierarchy of concepts and essence of speech.	2	CO1
8	What are the things you would do, if you have only one week to live?	1	CO3
9	Make a general purpose SWOT analysis to discover your strength and weakness	2	CO1
10	Identify some negative attitudes you have and find solution for replacing it	1	CO1
11	Prepare a Johari window model for self-awareness	2	CO1
	TOTAL	16	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of assignments
3. Guest/Expert lectures
4. Videos/Audio
5. Slides
6. Group discussions
7. Seminar
8. Case Study
9. Self-Learning Online Resources

9. LEARNING RESOURSES

Sr. No.	Title of Book	Author	Publication
1.	Time management	Marshall Cooks	Viva Books
2.	Basic managerial skill For all	E.H. McGrath	All Prentice Hall of India
3.	Managing Time First	Dr. R. L. Bhatia	
4.	Development of Generic Skill – I & Development of Generic Skill – II	K. Sudesh	Nandu Publications
5.	Body Language	Allen Pease	Sudha Publications
6.	Stress Management Through Yoga and Meditation		Sterling Publishers

10. WEB REFERENCES

1. http://wikieducator.org/Life_Skills_Development
2. http://www.essentiallifeskills.net
3. http://www.thechangeagency.org
4. http://www.time-management-solutions.com/
5. http://www.unicef.org/lifeskills/

11. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs. Geetha S.	
2	Internal	Mrs. Prachi Arora	
3	Internal	Mrs. Radhika Patwardhan	
4	External	Mrs. Shweta Salian Organization: Mithibai College	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056.

1. COURSE DETAILS

Programme:IT/CSE	Semester: I/II
Course: Basic Electronics	Group: B*
Course Code: BEX198911	Duration:16 Weeks

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per week					Examination Scheme and Maximum Marks								
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	2	-	-	5	3	70	20	10	70	25	50	-	175

3. COURSE OBJECTIVE

This Course provides essential competency in understanding the electronics circuits. This course introduces various electronic devices & their applications.

4. SKILL COMPETENCY

Students will develop the competencies

1) Measuring voltage , frequencies of different waveforms on CRO
2) Logical thinking to draw, understand and demonstrate working of electronic circuit.

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
1	Interpret basic knowledge on the working of various semi-conductor devices	Remember, Understand
2	Use diode in various electronic circuits	Apply
3	Use transistor for different switching circuits	Apply
4	Demonstrate the concepts of amplifier and photoelectric devices	Remember, Understand

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	Cos
1	**Semi-Conductors** 1.1. Conductor, Insulator, Semiconductor, 1.2. Intrinsic (*Si, Ge*) and Extrinsic semiconductors (P type. N type), 1.3. Doping, Energy level diagram, Energy Band diagram, 1.4. Electrons and holes in an intrinsic semiconductor, 1.5. Donor and acceptor impurities, 1.6. Diffusion, depletion, effect of temperature on intrinsic and extrinsic semiconductors.	04	06	**CO1**
2	**Semi-conductor diode characteristics** 2.1. P.N. junction as a diode, 2.2. barrier potential, depletion region, 2.3. P-N junction biasing, forward and reverse bias, 2.4. Current components in a P.N. diode, V.I. characteristics, knee voltage, reverse breakdown voltage and its temperature dependence, 2.5. Zener diode , V-I characteristics, Zener diode as a voltage regulator 2.6 Clipper circuit	06	10	**CO1**
3	**Rectifiers** 3.1. Need of Rectification, 3.2. Types of rectifiers: Half Wave Rectifier, Full Wave Rectifier (Centre Tap and Bridge) with waveforms, 3.3. Comparison of Rectifiers (efficiency, ripple factor, T.U.F. Ratio of rectification, PIV) 3.4. Filters: L filter, C filter and π. Filter.	08	10	**CO2**
4	**Bipolar junction Transistor** 4.1. The junction transistor, 4.2. Types of transistor: NPN, PNP junction transistors ,Symbols, 4.3. Operating principle, transistors current components, 4.4. Transistor configurations Common Emitter (CE) , Common Base (CB) , Common Collector (CC) , 4.5. Input and output characteristics, Graphical analysis of the C.E. configuration, Analysis of Active, cut-off and saturation regions, 4.6. current gain α & β, and relation between α and β, 4.7. operating point (Q point), DC-load line ,Need of biasing ,voltage divider biasing	08	12	**CO1**
5	**Single stage and Multi-stage Amplifiers** 5.1. Transistor as an amplifier, Single stage C.E. amplifier and its frequency response. 5.2. Functions of each component of CE Amplifier circuit, 5.3. Effect of coupling and emitter bypass capacitors, 5.4. Need of Multistage amplifier, types of coupling, direct coupled, R.C. coupled, transformer coupled and their frequency response.	07	10	**CO3**

6	**Multivibrators** 6.1. Switching action of transistor 6.2. Principle of working of multivibrator, 6.3. Types of Multivibrators, Astable, Monostable, Bistable, working circuits 6.4. Schmitt trigger and its applications.	07	10	**CO3**
7	**Photoelectric Devices** 7.1. Photoelectric effects, construction and char. of Photodiode, Phototransistor, Phototube, Multiplier Phototube, LED, LCD, Optocoupler 7.2. Photovoltaic cell and their applications.	04	06	**CO4**
8	**Power Amplifier** 8.1. Difference between voltage amplifier, Power Amplifier, performance qualities of power amplifier, 8.2. Class A Transformer coupled power amplifier, Heat sink ,Thermal runaway 8.3. Class A, B, AB operation, Class B Push pull and complementary symmetry amplifier	04	06	**CO4**
	TOTAL	**48**	**70**	

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 10 experiments with approx. 32 no of hours required.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	COs
1	Measuring voltages and frequency of different waveforms using CRO.	2	CO2
2	Graph the V-I Characteristics of Diode	2	CO1
3	Graph the V-I Characteristics of Zener diode.	2	CO1
4	Plot the H.W.R. waveforms with/without filter.	4	CO2
5	Plot the F.W.R. waveforms with/without filter.	4	CO2
6	Plot the load and line regulation of zener voltage regulator.	4	CO2
7	Graph the Input and Output characteristics of C.E. Transistor configurations.	4	CO3
8	Plot the frequency response of single stage C.E. Transistor amplifier.	4	CO4
9	*Plot the frequency response of coupling and bypass capacitor.*	4	CO4
10	Observe & Draw the output wave forms of astable Multi-vibrator as Voltage controlled oscillator [VCO]	2	CO2
11	Observe & Draw the output wave forms of Schmitt Trigger.	2	CO2
12	Observe and Draw input, output waveform of clipper circuits	2	
	TOTAL	**32**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no. of practicals.
3. Demonstrations and Simulations.

9. LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1.	Integrated electronics	Millman and Halkias	Mc Graw Hill
2.	Electronic devices and circuits	Millman and Halkias	Mc Graw Hill
3.	Principles of electronics	V. K. Mehta	S. Chand
4	Electronics devices and circuits theory	Robert Boylestad	Pearson
5	Electronic devices and circuits	Allen Mottershed	PHI
6	Basic electronics and linear circuits	Bhargava	Technical Teacher Training Institute

10. WEB REFERENCES

1. www.hep.fsu.edu
2. www.falstad.com\circuits
3. www.acsu.buualo.edu

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Semi-conductors	2	4	-	6
2	Semi-conductor diode characteristics	4	6	-	10
3	Rectifiers	2	2	6	10
4	Bipolar junction Transistor	4	8	-	12
5	Single stage and Multi-stage Amplifiers	2	2	6	10
6	Multivibrators	-	4	6	10
7	Photoelectric Devices	2	4	-	6
8	Power Amplifier	4	2	-	6
	TOTAL	20	32	18	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

4. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Abhijit Dongaonkar	
2	Internal	Prachi Arora	
3	Internal	Pankaj Rathod	
4	External	Omang Patel Organisation: K.J. Somaiya College of Engg.	

1. COURSE DETAILS

Programme: IT/ CSE	**Semester: I/II**
Course: Programming in C	**Group: c***
Course Code: PRC198912	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
2	4			6	3	70	20	10	70	25	50		175

3. COURSE OBJECTIVE

The goal of this course is to build the logic and introduce the programming fundamentals to the students as C is the basic language of all advanced computer languages.

4. SKILL COMPETENCY

1. Fundamentals of Structured Programming Language
2. Stepwise debugging and testing the programs.
3. Use of advanced concepts like pointers and structures.

5. COURSE OUTCOMES (COs) at the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
CO1	Develop programming logic skills using basic C constructs	Understand, Apply
CO2	Use primary, derived and user defined data types in application programs	Remember ,Apply
CO3	Conceptualize loops and control structure.	Understand, Remember, Apply
CO4	Apply modular approach in programming	Understand, apply

6. COURSE CONTENTS

Sr.	TOPIC/Sub-topic	Hours	Marks	COs
1	**Introduction to Programming** 1.1Algorithms, Flowchart, 1.2. Programming Languages, Types of Languages	2	5	CO1
2	**C Fundamentals** 2.1. Character Sets, Keywords, 2.2. Data types: int, char, float 2.3. Library I/O Functions 2.4. Identifiers, Constants, Declaration, Storage classes	2	5	CO1 CO2
3	**Operators & Expressions** 3.1. Arithmetic Operators, 3.2. Unary operator, 3.3. Assignment operators, 3.4. Conditional Operator 3.5 logical and comma operator	3	7	CO1
5	**Control Structure** 5.1. Branching statement if, nested if, if-else, switch-case 5.2. Looping constructs for, while, do-while, go to	7	14	CO3
6	**Arrays and strings** 6.1 Introduction 6.2 One dimensional arrays 6.3 Two dimensional arrays, Use in matrix computations. 6.4 Introduction to character arrays 6.5 String handling functions	6	11	CO2
7	**Function** 7.1. Defining a function, Accessing a function, 7.2. Argument passing: call by value and call by reference, recursion	6	12	CO4
8	**Pointers** 8.1. Pointer Declarations, passing pointer to function, 8.2. operations on pointers.	3	8	CO2
9	**Structure & Union** 9.1. Defining a structure, Processing a structure 9.2. User defined types 9.3. Passing structure to function	3	8	CO2
	TOTAL	32	70	

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 12 experiments with approx.no of hours required and corresponding CO attained should be specified here.

Sr. No.	Title of Experiment	Approx.Hrs required	COs
1	To implement the working of identifier, constant and variables with library functions.	4	CO1
2	To implement the working of arithmetic operators, Increment/ Decrement operators.	4	CO2
3	To implement the working of relational, logical operators, conditional operators.	4	CO2
4	To implement Implicit & Explicit type casting	2	CO1
5	To implement the concept of if, if... else, conditional statements(two problems each)	4	CO3
6	To implement the concept of nested if, & else if... ladder conditional statements(two problems each)	4	CO3
7	To implement the concept of switch...case statement(two problems each)	2	CO3
8	To implement the concept of Loops i.e. while, for & do-while(two problems each)	6	CO3
9	To implement the concept of goto, break & continue statement.	2	CO3
10	To implement the concept of one dimensional arrays(two problems each)	4	CO2
11	To implement the concept of two dimensional arrays(two problems each)	4	CO2
12	To implement the concept of string & it's various operations	4	CO2
13	To implement the concept of user defined functions.	8	CO4
14	To implement the concept of structures.	8	CO5
15	To implement the concept of pointers.	4	CO5
	Total	**64**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments etc.
3. Slides
4. Self-Learning Online Resources

9. LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication
1.	Programming with C	Byron Gottfried	McGraw Hill Education
2.	C Programming	BalaGuruSamy	Mc Grow Hill publication.
3	Let us C	Yashwant Kanetkar	BPB Publication.

10. WEB REFERENCES

1. http://www.tutorialspoint.com/cprogramming/
2. http://www.cs.cf.ac.uk/Dave/C/CE.html
3. http://www.technoexam.com/
4. http://www.thestudymaterial.com/c-c-programs.html

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Introduction to Programming	5	4		9
2	C Fundamentals	2	3		5
3	Operators & Expressions	2	3		5
4	Data Input / Output	4	3		7
5	Control Structure		4	8	12
6	Arrays and strings		3	8	11
7	Function	2	4	8	4
8	Pointers	2	6		8
9	Structures and Unions		4	4	8
TOTAL		12	30	28	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12.COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs. Radhika Pathardhan	
2	Internal	Ms. P.P. Bakaniya	
3	Internal	M.R. Solanki	
4	External	Chirag. Dedia Organization: ICJSCE.	

1. COURSE DETAILS

Programme: Computer Engineering	**Semester: II**
Course: Basics of Electrical Engineering	**Group: B***
Course Code: BEE190801	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks (ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	2	–	–	5	03	70	20	10	70	25	50	–	175

3. COURSE OBJECTIVE

This Course will help the students to comprehend the fundamentals of various facts, laws of Electrical Engineering. The subject will also familiarize the students with various measuring instruments.

4. SKILL COMPETENCY

The aim of the course is to help students attain the following industry identified competency. Students will be able to solve numerical based on ac &dc circuits. They will be able to identify basic working principle of electromagnetism and associated devices like transformers. They will be equipped to deal with practical applications of electricity in day to day life.

5. COURSE OUTCOMES(COs) At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	BLOOM'S LEVEL
CO1	To define fundamental concepts of Electrical engineering.	Remember, Understand,
CO2	To state laws and principles of electrical engineering.	Remember, Understand
CO3	To calculate parameters of and simplify electrical circuits.	Understand, Apply
CO4	To comprehend the working of electrical devices and circuits.	Remember, Understand

6. COURSE CONTENTS

Sr. No.	TOPIC/Sub-topic	Hours	Marks	COs
1	**Fundamentals :** 1.1. Concept of Electric Potential, Potential Difference (P D) and Electro-Motive-Force (EMF). 1.2.Ohm's law, resistance in series and parallel ,Concept of Resistivity and Conductivity, Effect of Temperature on Resistance, Temp.co-efficient of Resistance (simple numerical), 1.3. Wheatstone Bridge, Classification of Electric Current:- Direct Current (DC)- Alternating Current (AC) Sources of Electric Current (DC), 1.4. Concept of Electrical Work, Power and Energy.-Their SI units (simple numerical)	08	11	CO1, CO2, CO4
2	**D.C. Circuits:** 2.1. Duality between Series and Parallel Circuits. 2.2. Definitions of terms Related to Electric Circuits, Circuit Parameters, Linear Circuit, Non-linear Circuit, Bi-lateral Circuit, Uni-lateral Circuit, 2.3. Electric Network, Passive Network, Active Network, Node, Branch, Loop, Mesh. 2.4. Kirchhoff's Laws -Kirchhoff's Current Law-Kirchhoff's Voltage Law (Simple Numerical)Mesh Analysis - (Simple Numerical with two equations)Nodal Analysis (Simple Numerical with two equations)Star/Delta and Delta/Star Transformation)	08	11	CO1 CO3
3	**Magnetic Circuits:** 3.1. Concept of magnetic flux B ,Flux per unit pole ϕ, flux density, intensity of magnetization I, Magnetic field strength H, Susceptibility K, magneto motive force, 3.2. Absolute and Relative permeability, relation between B,H,I,K , Curie point, 3.3. series magnetic circuit numerical based on it, comparison of electrical magnetic circuit, B.H. curve and hysteresis loop, hysteresis loss, 3.4. Rise and Decay of current in inductive circuits.	08	13	CO1, CO2, CO3

4	**Electromagnetic Induction:** 4.1. Relation Between Magnetism and Electricity. 4.2. Production of Induced E.M.F. and Current. Faraday's Laws of Electromagnetic Induction. Faraday's First Law, Faraday's Second Law 4.3. Induced E.M.F: Statically Induced E.M.F., Dynamically Induced E.M.F. (Simple Numerical), Direction of Induced E.M.F. and Currents 4.4. Fleming's Right Hand Rule, Lenz's Law, 4.5. Mutual inductance, self-inductance, coefficient of mutual induction and self-inductance. Inductance in series and parallel. 4.5. Mutual inductance, self-inductance, coefficient of mutual induction and self-inductance. Inductance in series and parallel.	10	14	CO1, CO2, CO4
5.	**A.C. Fundamentals:** 5.1. A.C. Cycle, Frequency, period, phase, Phase difference 5.2. RMS value, maximum circuit's average & values to current/voltage current voltage & power relations in purely resistive, inductive & capacitance circuits. (No mathematical treatment required) 5.3. Concept of reactance, impedance, power factor, simple A.C. Circuits & numerical based on it.	08	11	CO1, CO4
6.	**Single Phase Transformer:** 6.1. Function and principle of operation, constructional features, 6.2. types of transformer, derivation of EMF Equation of a transformer	06	10	CO1, CO3, CO4
	TOTAL	**48**	**70**	

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 10 experiments with approx.no of hours required and corresponding CO attained should be specified here.

Sr. No.	Title of Experiment	Approx.Hrs required	COs
1.	Resistors in Series circuit	04	CO1
2.	Resistors in Parallel circuit	04	CO1
3.	Wheatstone Bridge	02	CO4
4.	Kirchhoff's Voltage Law (KVL)	04	CO2

5.	Kirchhoff's Current Law (KCL)	04	CO2
6.	Thevenin's Theorem	04	CO3
7.	Single Phase Transformer	02	CO4
8.	Series Generator	02	CO4
9.	RMS and Peak value of an AC signal	02	CO3
10	RLC Series	02	CO4
11	RLC parallel	02	CO4
12	Assignments No. 1 – *DC circuits*	02	CO3
13	Assignments No. 2 – Magnetic Circuits	02	CO1, CO2
14	Assignments No. 2 – Single Phase Transformer	02	CO4, CO1
	TOTAL	**32**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments/drawings etc.
3. Demonstrations
4. Slides
5. *Self-Learning Online Resources*

9. LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication
1.	Electrical Technology Volume 1	B. L. Theraja.	S.Chand Limited
2.	Electrical Technology Volume 2	B. L. Theraja.	S.Chand Limited
3.	Electrical Technology	Edward Hughes.	Longman Scientific & Technical
4.	Basics Electrical Engineering	V.K.Mehta	S.Chand Limited

10. WEB REFERENCES

1. http://www.facstaff.bucknell.edu/mastascu/elessonsHTML/EEIndex.html
2. http://lecturenotes.in/notes/engg/eee_1.html
3. http://www.indianshout.com/electrical-engineering-eee-full-study-material-by-iit-professors/2180
4. http://www.elect.mrt.ac.lk/pdf_notes.htm
5. http://faraday.ee.emu.edu.tr/eeng224/lecture_notes.htm

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1	Fundamentals	4	4	3	11
2	D.C. Circuits	3	3	5	11
3	Magnetic Circuits	5	5	3	13
4	Electromagnetic Induction	5	4	5	14
5	A.C. Fundamentals	6	5	-	11
6	Single phase Transformer	4	4	2	10
	TOTAL	**25**	**23**	**22**	**70**

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)
NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs.Swapna Naik	
2	Internal	Mr.Siddhesh Masurkar	
3	Internal	Mrs. Rupali Vijay Pawar	
4	External	Mr. Vijay Pawar Organization: BURNS&MAC DONALD	

1. COURSE DETAILS

Programme: Computer Engineering	**Semester: II**
Course: PC Architecture	**Group: C***
Course Code:PCA190802	**Duration:16 Weeks**

2. TEACHING AND EXAMINATION SCHEME

Scheme of Instructions and Periods per Week					Examination Scheme and Maximum Marks							
Theory Hrs L	Practical Hrs P	Drawing Hrs D	Tutorial Hrs T	Credits (L+P+D+T)	Theory Paper Duration and marks(ESE)		SSL	TA	TH	TW	PR	OR	TOTAL
					Hours	Marks							
3	2	_	_	5	03	70	20	10	70	25	-	25	150

3. COURSE OBJECTIVE

This Course will help students to comprehend PC Architecture including Motherboard, Processor and Power supply. Students will also be familiarized with various Troubleshooting and Maintenance techniques.

4. SKILL COMPETENCY

1. PC Hardware assembling and disassembling
2. Basic Microprocessor programming
3. PC maintenance

5. COURSE OUTCOMES (COs) at the end of the semester student will be able to: -

CO No.	COURSE OUTCOME	Bloom's LEVEL
CO1	Identify various architecture of Motherboard and Chipset.	Remember, Apply
CO2	Demonstrate architecture of 8085 microprocessor.	Remember, Apply
CO3	Interpret the working of different storage devices and its interfaces.	Remember, Understand
CO4	Troubleshoot, Maintenance of PC and test power supply.	Understand, Apply

6. COURSE CONTENTS

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
1	**On the Motherboard** 1.1 PC Architecture – Basic Block diagram 1.2 Types of motherboard – AT,ATX,Pentium 1.3 Motherboard components 1.4 Speeding Up Processor Operations - Cache, Clocking, Overclocking 1.5Multi-Core Processors, Sockets and Slots 1.6 Processor Cooling, Installing Processors 1.7Upgrading and Replacing Motherboards. 1.8Expansion Slots • ISA (Industry Standard Architecture), • PCI (Peripheral Component Interconnect) • AGP (Accelerated Graphics Port) • PCIe (Peripheral Component Interconnect-Express) 1.9 Upgrading and Replacing Motherboards 1.10 CMOS setup	**08**	**15**	**CO1**
2	**8085 Microprocessor** 2.1. Introduction of microprocessor, RISC and CISC 2.2 Von Nuemon and Harward architecture 2.3 Features of 8085 2.4 Functions of various units of 8085 2.5 Addressing modes 2.6 Overview of instruction set and instruction types.	**10**	**12**	**CO2**
3	**Chipset** 3.1Chipset basic 3.2 Chipset Architecture915G and 945G 3.2 overview of Dumb and smart chips 3.3 chipset Architecture: North / South Bridge architecture and Hub architecture	**08**	**8**	**CO1**

Sr. No.	TOPIC / Sub-Topics	Hours	Marks	COs
4	**Storage Devices And Interfacing** 4.1 Hard disk constructions and working, 4.2. Recording Technique : FM, MFM, RLL Perpendicular magnetic Recording, 4.3 Terms related to Hard Disk: Track, Sector cylinder, cluster, landing zone, MBR, Zone recording. 4.4 Formatting and partitioning 4.5 Introduction to file system, FAT basics. 4.6 Hard Disk Drive Interfaces 4.6.1 ATA – AT Attachment, PATA,SATA 4.6.2 IDE (Integrated Drive Electronics 4.6.3 SCSI (Small Computer System Interface 4.7 SSD (Solid State Drive) 4.8 Other Storage Devices Overview	08	14	CO3
5	**Maintenance and troubleshooting** 5.1. Different types of maintenance, preventive and remedial measures 5.2. Periodic Maintenance, intermittent and hard on (persistence) faults. 5.3. Diagnostic tools: Nodal testers and system tester 5.4 CPU, Display, motherboard, keyboard and I/O problems 5.5 System utilities for maintaining PC 5.5.1 Basic system utilities 5.5.2 Storage device management utilities 5.5.3 File management utilities	08	14	CO4
6	**Power supply** 6.1 Linear PS, SMPS, Uninterrupted PS and its types. 6.2 Power line consideration, need of earthing. 6.3 Factors affecting PC Operation	06	7	CO4
	TOTAL	48	70	

7. LIST OF PRACTICALS

Term Work consists of Journal containing minimum no of 10 experiments with approx. 2 or 4 hours required to attain corresponding COs.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	COs
1.	Compare 286/386 motherboard with Pentium	02	CO1
2.	Setup BIOS-CMOS setup	02	CO1
3.	Demonstrate working of HDD	02	CO3
4.	Demonstrate formatting , partitioning and Disk fragmentation of HDD	04	CO3
5.	Understand troubleshooting of PC system using Flow Chart	02	CO4
6.	Testing of Switch Mode Power Supply/UPS	04	CO4
7.	Understand working of 8085 kit	04	CO2
8.	Perform two 8bit addition and subtraction	04	CO2
9.	Perform two 16bit addition	04	CO2
10	Check contents and predict contents of Flag Register.	04	CO2
11	Perform Sorting of numbers- Ascending & Descending	04	CO2
		32	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments/drawings etc.
3. Guest/Expert lectures
4. Video Lectures
5. Seminar
6. Case Study
7. Self-Learning Online Resources

9. LEARNING RESOURSES

Sr. No.	Title Of Book	Author	Publication
1.	IBM PC Trouble Shooting & Repair Guide.	Robert C. Brenner	H.W. Sams & Company
2.	Introduction to computers	Peter Norton	TMH
3.	IBM PC & Clones	Govind Rajalu	TMH
4.	Microprocessor	A. P. Godse	Technical publication
5.	Microprocessor and Interfacing, Programming & Hardware	Douglas V Hall, 2nd Edition	Tata McGraw Hill

10. WEB REFERENCES

1. www.intel.com
2. www.pcworld.com
3. http://www.phy.ornl.gov/csep/ca/node2.html
4. http://www.enthusiastpc.net/articles
5. http://www.dummies.com/how-to/computers-software/pcs-laptops/maintenance.html

11. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Sr. No.	TOPIC	Distribution of Theory Marks			
		R Level	U Level	A Level	Total Marks
1.	On the Motherboard	8	–	7	15
2.	8085 Microprocessor	6	–	6	12
3.	Chipset	4	–	4	08
4.	Storage Devices And Interfacing	7	7	–	14
5.	Maintenance and troubleshooting	–	7	7	14
6.	Power supply	–	3	4	07
TOTAL		**25**	**17**	**28**	**70**

R Remembering, U Understanding, A Applying, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

12. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME	SIGNATURE
1	Internal	Mrs.Prachi Arora	
2	Internal	Mrs. Krishna Bhatt	
3	Internal	Mr. Siddhesh Masurkar	
4	External	Mr. Rushabh Udani	

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC MUMBAI 400056.