Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonepat)
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. 1st YEAR (SEMESTER – II) (Common for all branches)
Credit Based Scheme w.e.f. 2012-13

S. No.	Course No.	Course Title	Teaching Schedule L	T	P	Marks of Class work	Examination Marks Theory	Practical	Total	Credit	Duration of Exam
1.	MATH102B	MATHEMATICS-II	3	1		25	75	-	100	4	3
2	PHY102B	ENGINEERING PHYSICS-II	3	1		25	75	-	100	4	3
3	ME101 B	MANUFACTURING PROCESSES (**Gr-B**)	3	1		25	75	-	100	4	3
		OR									
	CH101 B	ENGINEERING CHEMISTRY **(Gr-A)**	3	1		25	75				
4	EE101B	PRINCIPLES OF ELECTRICAL ENGINEERING (**Gr-B**)	3	1		25	75	-	100	4	3
		OR									
	CSE101B	INTRODUCTION TO COMPUTERS & PROGRAMMING **(Gr-A)**	3	1		25	75	-			
5	ECE102B	BASICS OF ELECTRONICS ENGINEERING	3	1		25	75	-	100	4	3
		OR									
	BT102B	BASICS OF BIO TECHNOLOGY									
		OR									
	HUM102 B	ORAL COMMUNICATION SKILLS **OR**									
	CE102 B	BASICS OF CIVIL ENGINEERING									
6	ME103B	ENGINEERING GRAPHICS & DRAWING (**Gr-B**)	1	-	4	40	-	60	100	3	3
		OR									
	ME105B	ELEMENTS OF MECHANICAL ENGINEERING **(Gr-A)**	3	1	-	25	75	-	100	4	
7	PHY104B	PHYSICS LAB-II	-	-	2	20		30	50	1	3
8	ME 107B	WORKSHOP PRACTICE (**Gr-B**)	-	-	4	40		60	100	2	3
		OR									
	CH103B	CHEMISTRY LAB**(Gr-A)**	-	-	2	20		30	50	1	
9	EE103B	PRINCIPLES OF ELECTRICAL ENGINEERING LAB (**Gr-B**)	-	-	2	20		30	50	1	3
		OR									
	CSE103B	COMPUTER PROGRAMMING LAB **(Gr-A)**	-	-	2	20		30	50		
10	ME109B	ELEMENTS OF MECHANICAL ENGINEERING LAB **(Gr-A)**	-	-	2	20		30	50	1	3
11	GP 102B	GENERAL PROFICIENCY AND ETHICS	1	-	-	-	-	50	50	2	3
	Total	**Gr-B**	**17**	**5**	**12**	**245**	**375**	**230**	**850**	**29**	
		Gr-A	**19**	**6**	**8**	**230**	**450**	**170**	**850**	**30**	

Note:

0 Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency and Ethics Syllabus.

1 Each student has to undergo a workshop at least 4 weeks (80-100 hours) at the end of II semester during summer vacations. Out of four weeks, two weeks would be dedicated to general skills and two weeks training for specialized discipline/department. The evaluation of this training shall be carried out in the III semester.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronics gadgets including Cellular phones are not allowed in the examination.

4 All the branches are to be divided into Group-A and Group-B as per the suitability of the Institute/College so that there is equitable distribution of teaching load in odd and even semesters.

5 The elective course HUM102B ORAL COMMUNICATION SKILLS is deleted with effect from the session 2013-14.

MATH 102B MATHEMATICS - II
B. Tech. Semester - II (Common for all Branches)

L	T	P	Credits			
				Class Work	:	75 Marks
3	1	--	4	Examination	:	75 Marks
				Total	:	100 Marks
				Duration of Examination	:	3 Hours

UNIT – I

ORDINARY DIFFERENTIAL EQUATIONS & ITS APPLICATIONS : Exact differential equations.

Equations

reducible to exact differential equations. Applications of Differential equations of first order & first degree to simple electric circuits, Newton's law of cooling, heat flow and orthogonal trajectories.

LINEAR DIFFERENTIAL EQUATIONS OF SECOND AND HIGHER ORDER. Complete solution, complementary function and particular integral, method of variation of parameters to find particular Integral, Cauchy's and Legender's linear equations, simultaneous linear equations with constant co-efficients.

UNIT-II

LAPLACE TRANSFORMS AND ITS APPLICATIONS : Laplace transforms of elementary functions, properties of Laplace transforms, existence conditions, transforms of derivaties, transforms of integrals, multiplication by tn, division by t. Evaluation of integrals by Laplace transforms. Laplace transform of Unit step function, unit impulse function and periodic function. Inverse transforms, convolution theorem, application to linear differential equations and simultaneous linear differential equations with constant coefficients.

UNIT-III

FUNCTIONS OF COMPLEX VARIABLE : Definition, Exponential function, Trignometric and Hyperbolic functions, Logrithmic functions. Limit and Continuity of a function, Differnetiability and Analyticity. Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and formula.

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeroes and singularities of complex functions, Residues

UNIT-IV

FOURIER SERIES AND FOURIER TRANSFORMS : Euler’s formulae, conditions for a Fourier expansion, change of interval, Fourier expansion of odd and even functions, Fourier expansion of square wave, rectangular wave, sawtoothed wave, half and full rectified wave, half range sine and consine series.

Fourier integrals, Fourier transforms, Shifting theorem (both on time and frequency axes), Fourier transforms of derivatives, Fourier transforms of integrals, Convolution theorem, Fourier transform of Dirac-delta function.

TEXT BOOKS :

Advanced Engg. Mathematics F Kreyszig
Higher Engg. Mathematics B.S. Grewal
REFERENCE BOOKS:
Differential Equations – H.T.H. Piaggio.
Elements of Partial Differential Equations – I.N. Sneddon.
Advanced Engineering Mathematics – R.K. Jain, S.R.K.Iyengar.

Advanced Engg. Mathematics – Michael D. Greenberg.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed

ECE 102B BASICS OF ELECTRONICS ENGINEERING

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits		
3	1	--	4	Class Work	: 25 Marks
				Examination	: 75Marks
				Total	: 100 Marks
				Duration of Examination	: 3 Hours

UNIT I

Semiconductor Physics, Diodes and Applications: Basic concepts, intrinsic and extrinsic semiconductors, diffusion and drift currents ,Hall effect and its applications-pn junction under open circuit, reverse bias and forward bias conditions, p-n junction in the breakdown region, ideal diode, types of diodes –zener diode, varactor diode, LED and photodiode. Rectifier (half wave and full wave).

Amplifiers: Introduction of different types of BJT amplifiers & their characteristics.

UNIT II

Operational Amplifiers: OP-amps, its characteristics, inverting, non-inverting, summing, averaging, scaling ,difference, integrator and differentiator amplifiers.

Power Supplies: Introduction and working of switched mode power supply (SMPS), voltage regulator.

UNIT III

Digital Electronics: Binary, Octal and Hexadecimal number system and conversion, Boolean algebra, truth tables of logic gates AND, OR,NOT,EX-OR,EX-NOR, NAND, NOR AND their implementation using diodes transistors, switches and lamps, Universal gates.

Electronic Instruments: Transducers, Role, importance and applications of general purpose test instruments viz. multi meter (digital and analog), cathode ray oscilloscope (CRO), function/ signal generator.

UNIT IV

Communication System: Modulation, need of modulation, Block diagram of basic communication system, overview of AM, FM and PM.

Microprocessor: Basics of 8085 & its architecture. Instruction set, Interrupts, Addressing modes.

Refrence Books:

Sedra A S and Smith K C. “Microelectronic Circuits” New York.Oxford University Press, New York

Tocci R J and widner N S “Digital Systems” – Principles and Applications”, Pearson Education India , new Delhi .

Cooper and Helfric, “Modern Electronic Instrumentation and Measuring Techniques”. Prentice Hall of India, New Delhi.

Boylestad and Nashelesky, “Electronic Devices and Circuit Theory”, Pearson Education India, New Delhi

Millman and Grabel, “Microelectronics”, Tata McGraw Hill

Millman and Halkias, “Electronics Devices and Circuits”. Tata McGraw Hill

Kennedy and Davis, “Electronic Communication Systems”, Tata McGraw Hill

Ramesh S. Gaonkar, “Microprocessor Architecture,Programming,and Applications with the 8085”,Penram International Publishing.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed

BASICS OF
BT 102B BIOTECHNOLOGY
B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits			
3	1	--	4	Class Work	:	25 Marks
				Examination	:	75Marks
				Total	:	100 Marks
				Duration of Examination	:	3 Hours

UNIT – I

Introduction: Nature and scope of Biotechnology.
Cell Structure and Function: Prokaryotes and Eukaryotes- cell wall, cell membrane, nucleus,
mitochondria, chloroplast, ribosome, vacuoles, bacteria and viruses: brief descriptions.
Biomolecules: A brief account of structure and functions of carbohydrates, lipids, proteins.

UNIT– II

Cell Division: Mitosis and meiosis
Genes and chromosomes: Classical- Mendel's laws and chromosomes, nature of genetic material, DNA and RNA as genetic material, concept of organization of genetic material into chromosomes.
DNA replication: DNA polymerases, replication mechanism.

UNIT-III

Gene Expression: Central dogma, genetic code, gene expression-a brief account of transcription and translation, housekeeping genes, mutations and their molecular basis.
Genetic Engineering: An introduction to genetic engineering: cloning (vectors, enzymes), DNA and genomic libraries, transgenics, DNA fingerprinting, genomics.

UNIT – IV

Applications of Biotechnology : Bioprocess and fermentation technology, cell culture, enzyme technology, biological fuel generation, single cell protein, sewage treatment, environmental biotechnology, biotechnology and medicine, biotechnology in agriculture & forestry industry, food and beverage technology, production of biological inventions, safety in biotechnology.

TEXT/ REFERENCE BOOKS:

Biotechnology, Smith, Cambridge Press.
Modern Concepts of Biotechnology, H. D. Kumar, Vikas Publishing House (P) Ltd.
Elements of Biotechnology, P. K. Gupta, Rastogi Publications.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed

HUM 102B ORAL COMMUNICATION SKILLS

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits			
				Class Work	:	25 Marks
3	1	--	4	Examination	:	75Marks
				Total	:	100 Marks
				Duration of Examination	:	3 Hours

OBJECTIVE

To train students to have proficiency in oral communication through interpersonal communicative situations.

COURSE CONTENT

UNIT I

Essentials of Speaking Skills:

Familiarity with phonetic sound symbols; Transcription of simple words using International Phonetic Alphabet; Use of dictionary to cultivate standard pronunciation and develop phonetic discrimination

UNIT II

Speaking Skills:

Need and Significance of Effective Oral Communication; Practice of Conversation – Interpersonal and Telephonic Conversation; Formal Group Discussion

UNIT III

Non-Verbal Elements in Oral Communication Skills:

Reading Face, eyes, gesture and body posture, time, space and culture in communicative situations; practicing verbal and non-verbal communication (Body Language) to acquire effective Oral communication;

UNIT IV

Listening Skills:

Essentials of Good Listening, Types of Listening, Barriers in Effective listening, Exercises in Listening to Talk Shows, Speech Reviews; Practice in English Sounds and Speech using RP/MRP

RECOMMENDED READING

Buck, Gary. *Assessing Listening.* Delhi: Foundation Books (Cambridge University Press), 200.

Balasubramanian, T. *A Textbook of English Phonetics for Indian Students.* Chennai: MacMillan,1981 (rpt 2007).

Gangal, J.K. *A Practical Course in Spoken English*. New Delhi: PHI, 2011
Raman, Meenakshi and Sangeeta Sharma. Communication Skills. Delhi: OUP, 2011
Ribbens, Geoff and Richard Thompson. *Body Language*. New York: Hodder & Stoughton, 2007.

CE 102B BASICS OF CIVIL ENGINEERING
B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits			
3	1	--	4	Class Work	:	25 Marks
				Examination	:	75Marks
				Total	:	100 Marks
				Duration of Examination	:	3 Hours

UNIT - I

Materials for Construction: Stones, Sands, Lime, Bricks, Timber, Steel their Classification and Properties. Different Types of Cement and their Properties, manufacturing of Cement, Concrete, and properties of Concrete, Ingredient of Concrete and Their Functions
Component parts of a Building, Foundation, Masonry Works, Doors and Windows, Floors, Roofs, DPC, Building Services

UNIT - II

Surveying , Introduction to Surveying: Definition, importance, classification of surveys, Principle, Leveling: definitions of terms used in leveling, different types of levels, Contours, Definition, representation of reliefs, horizontal equivalent, contour interval, characteristics of contours, methods of contouring, contour gradient, uses of contour maps, Introduction to GIS, GPS and Remote sensing.

UNIT - III

Transportation: Various modes and means of transportation, Different types of transport systems, Importance of road transport, History of Road Development, Indian Road Congress. Main features of 20 years road development plans in India, PMGSY
Sources of power, estimation of water power, water budget equation, necessity and importance of harnessing small hydro power plants, Dams, Types of Dams, Location and Impact assessment of a Dam project.

UNIT - IV

Geotechnical Engineering: History and its applications, Soil Properties, Classification of Soil, Geotechnical and Geophysical investigation of Soil.
Irrigation Engineering: Necessity, advantages, disadvantages, impact of irrigation on human environment, need and development of irrigation in India.

Text Books:

Basic Civil Engineering, Satheesh Gopi, Pearson.
Basic Civil Engineering, Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kr. Jain, Firewall Medi

Reference Books:

Surveying by Prof. N. Singh, Tata McGraw Hill, New Delhi
Basic Civil Engineering, Rakesh Beohar, Firewall Media
Highway Engg. by S. K. Khanna & C.e.G.Justo, Nem Chand & Bros,Roorkee
Water Resources Engineering by Linseley and Franzini
Basic Civil Engineering, L.G. Kulkarni A. D. Pawar S. P. Nitsure, Technical Publications.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

PHY 104B PHYSICS LAB. - II
B. Tech. Semester - II (Common for all Branches)

L	T	P	Credits			
--	--	2	1	Class Work	:	20 Marks
				Examination	:	30Marks
				Total	:	50 Marks
				Duration of Examination	:	3 Hours

Note: Students will be required to perform 10 experiments in a semester.

LIST OF EXPERIMENTS

0 To find the low resistance by Carey - Foster's bridge.
To find the resistance of a galvanometer by Thomson’s constant deflection method using a post office box.
To find the value of high resistances by Substitution method.
To find the value of high resistances by Leakage method.
To study the characteristics of a solar cell and to find the fill factor.
To find the value of e/m for electrons by Helical method.
To find the ionisation potential of Argon/Mercury using a thyratron tube.
To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus.
To study the characteristics of (Cu-Fe, Cu-Constantan) thermo couple.
To find the value of Planck's constant by using a photoelectric cell.
To find the value of co-efficient of self-inductance by using a Rayleigh bridge.
To find the value of Hall Co-efficient of semi-conductor.
To study the V-I characteristics of a p-n diode.
To find the band gap of intrinsic semi-conductor using four probe method.
To calculate the hysteresis loss by tracing a B-H curve.
To verify the Truth Table of various Logic Gates.

RECOMMENDED BOOKS :

Advanced Practical Physics – B.L. Worshnop and H.T. Flint (KPH)
Practical Physics – S.L.Gupta & V.Kumar (Pragati Prakashan).
Advanced Practical Physics Vol.I & II – Chauhan & Singh (Pragati Prakashan).

GP 102B GENERAL PROFICIENCY AND ETHICS B. Tech. Semester – II (Common for all Branches) **50Marks**

L	T	P	Credits	Examination	50 Marks
1	--	--	2	Total	

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

A Faculty Counselor will be attached to a group of students which will remain associated with him /her during the entire period of the degree program in the University. Each faculty member will serve as a faculty counselor. They will act like a local guardian for the students associated with him / her and will help them in terms of career guidance, personal difficulties.

The student will present a written report before the committee with following in view:

The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

I.	Academic Performance --------	
II.	Extra Curricular Activities / Community Service, Hostel Activities	**(8 Marks)**
III	Technical Activities / Industrial, Educational tour	**(8 Marks)**
IV	Sports/games	**(4 Marks)**
V	Moral values & Ethics	**(10 Marks)**

NOTE: Report submitted by the students should be typed on both sides of the paper.

A student will support his/her achievement and verbal & communicative skill through presentation before the committee. **(20 Marks)**

Moral values & Ethics

Syllabus - Introduction to Value Education. Understanding ethics, value system, happiness, prosperity

A minor test / Quiz will be conducted and It will be the duty of the concerned teacher assigned to teach Moral values & Ethics to submit the awards to respective chairman of the department / Director/Principal.

The evaluation of this course will be made by the following Committee.

University Departments:

1	Chairperson of the Department	Chairman
2	Senior Most Faculty Counselor	Member
3	Vice- Chancellor's Nominee	Member

Affiliated Colleges:

1	Director/Principal	Chairman
2	Head of the Department/Sr. Faculty	Member
3	External Examiner to be appointed by the University	Member

Note: Remuneration will be paid to the external examiner only (at par with the other practical examinations).