Sharnbasva University, Kalaburagi
Scheme of Teaching and Examination 2018-19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018-19)

I / II SEMESTER B.Tech (Physics Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week		Examination				Credits
				T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	18MAT11/21	Engineering Mathematics-	Mathematics	4		3	50	50	100	04
2	18PHY12/22	Engineering Physics	Physics	4		3	50	50	100	04
3	18CIV13/23	Elements of Civil Engineering	Civil Engineering	3		3	50	50	100	03
4	18MES14/24	Elements of Mechanical Engineering	Mechanical Engineering	3		3	50	50	100	03
5	18PPS15/25	Programming for Problem Solving	Computer Science & Engineering	3		3	50	50	100	03
6	18PHYL16/26	Engineering Physics Lab	Physics		2	3	50	50	100	01
7	18CPL17/27	Computer Programming Lab	Computer Science & Engineering		2	3	50	50	100	01
8	18PC18/28	Professional Communication Lab	Humanities		2	2	50	50	100	01
9	18PROJ19/29	Project I/II	--		2	2	50	50	100	01
Total				**17**	**8**	**25**	**450**	**450**	**900**	**21**

I / II SEMESTER B.Tech (Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week		Examination				Credits
				T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	18MAT11/21	Engineering Mathematics	Mathematics	4		3	50	50	100	04
2	18CHE12/22	Engineering Chemistry	Chemistry	4		3	50	50	100	04
3	18ELN13/23	Basic Electronics Engineering	Electronics & Communication Engineering	3		3	50	50	100	03
4	18ELE14/24	Basic Electrical Engineering	Electrical & Electronics Engineering	3		3	50	50	100	03
5	18CEDL15/25	Computer Aided Engineering Drawing	Mechanical Engineering	1	4	3	50	50	100	03
6	18CHEL16/26	Engineering Chemistry Lab	Chemistry		3	3	50	50	100	01
7	18EECL17/27	Electronics & Electrical Lab	Electronics & Communication Engineering		3	3	50	50	100	01
8	18ES18/28	Environmental Studies	Civil Engineering	1		1	50	50	100	AC *
9	18PROJ19/29	Project I/II	--		2	2	50	50	100	01
Total				**16**	**12**	**25**	**450**	**450**	**900**	**20**

***Audit Course**

SHARNBASVA UNIVERSITY

MODULE - 1

Oscillations and Waves

Free Oscillations : Definition of SHM, derivation of eqn for SHM, Mechanical and electrical simple harmonic oscillators (mass suspended to spring oscillator). Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations : Theory of damped oscillations : over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, sharpness of resonance. One example for mechanical resonance.

Shock Waves : Mach number, Shock Waves. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves.

Numerical Problems.

MODULE - 2

Elastic Properties of Materials :

Elasticity : Concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, Hooke's Law, different elastic moduli, Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) &Rigidity modulus (n) in terms of α & β. Relation between Y, n & K, limits of Poisson's ratio.

Bending of beams : Derivation of expression for bending moment. Single Cantilever, derivation of expression for Young's modulus.

Torsion of Cylinder : Expression for couple for unit twist of a solid cylinder (Derivition), Torsional pendulum – Expression for period of oscillation.

Numerical Problems.

MODULE - 3

Optical Fibers, EM Waves and Maxwell's equation

Optical Fibers : Propogation Mechanism, angle of acceptance. Numerical aperture. Modes of Propagation & types of optical fibers, attenuation mechanisms, attenuation coefficient (qualitative), discussion of block diagram of point to point of communication system. Applications of optical fibers.

Maxwell's equation : Fundamentals of vector calculus, divergence & curl of electric field & magnetic field (static), Gauss divergence theorem & Stoke's theorem. Description of laws of electrostatics, Magnetism & Faraday's laws of EMI.

EM Waves : The wave eqn in differential form in free space (qualitative), Plane EM waves in vaccum, there transverse nature, Polarisation of EM waves (qualitative).

Role of Dielectrics : Dielectrics, Mention of solid, liquid & gaseous dielectrics with one example each. Application of dielectrics in transformers.

Numerical Problems.

MODULE - 4

Quantum Mechanics and Lasers

Quantum Mechanics : Heisenberg uncertainty principle, applications (non-existence of electron in the nucleus), wave function, properties of wave function, time independent Schrodinger wave equation, particle in box, eigen values, eigen functions.

Lasers : Principles of lasers, Einstein's coefficients (derivation of expression for energy density). Requisites of laser system. Conditions for laser action. Construction & working of CO_2 & Semiconductor laser. Applications of laser in defence (Laser range finder) & Engineering (data storage).

Numerical Problems.

MODULE – 5

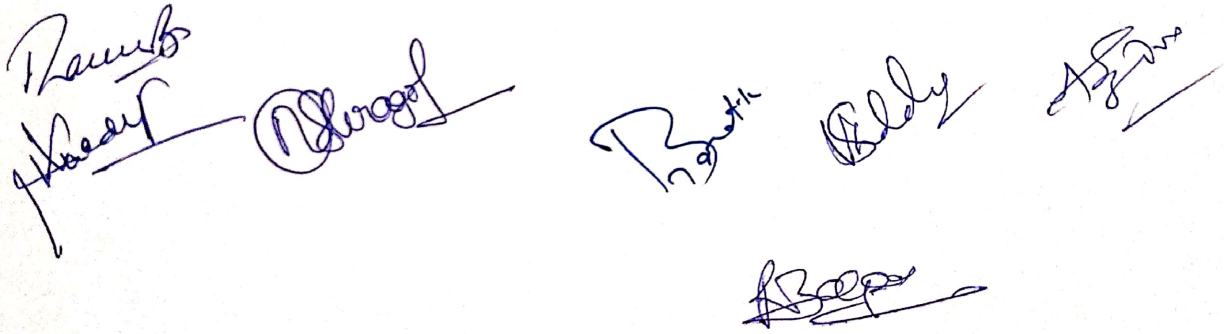
Materials Science

Free electron theory of metals : Free electron concept (mean free path, mean collision time, drift velocity, relaxation time), assumptions of classical free electron theory, Mention the expression for electrical conductivity for classical free electron theory , failures of classical free electron theory, assumptions of quantum free electron theory, expression for quantum free electron theory, success of quantum free electron theory, Fermi energy, Fermi factor, dependence of Fermi factor on temperature.

Semiconductor Physics : Expression for concentration for electrons in conduction band, Hole concentration in valence band (only mention the expression), Expression for electrical conductivity in intrinsic semiconductor, Hall effect.

Nanomaterials : Quantum structures (0-D, 1-D, 2-D), Carbon nanotubes, structure of CNT's

Numerical Problems.



Engineering Physics Lab external Lab

Examiners details:

Prof. Revansiddappa
Lingraj appa Engg.
College Bidar
E-mail: rsappas@gmail.com

Prof. Vikram Patel
Shetty Engg. college
Kalburagi
ail: vikramfz@gmail.com

of. Satish Lature
PDA Engg. college
Kalburagi
-mail: Satishkumarlature@gmail.com

f. Dilip. M
Basavakalyan Engg college
Basavakalyan.
ail: mataled123@gmail.com

S. Prabhakar
Veerappa nisty Engg
Sheraper.
ail: P.n.patel01@gmail.com.

Course Title:	Engineering Physics Lab (Common for all Branches/Stream)		
Course Code:	22PHY18/28	CIE Marks	50
Course Type (Theory/Practical)	Practical	SEE Marks	50
Teaching Hours/Week (Practical)	02	Total Marks	100
		Exam Hours	02
Total Hours of Pedagogy	38 hrs	Credits	01

Course objectives

- To realize experimentally, the mechanical, electrical and thermal properties of materials, concept of waves and oscillations
- To design simple circuits and hence study the characteristics of semiconductor devices

List of Experiments

1. Determine Acceptance angle and Numerical aperture of an optical fiber.
2. Determine Wavelength of semiconductor laser using Laser diffraction by calculating grating constant.
3. Draw I-V characteristics of photodiode and calculate power responsivity.
4. Determination and Estimation of Fermi Energy of Copper.
5. Calculation of Dielectric constant by RC charging and Discharging.
6. Stefan's Law of radiation.
7. Determination of Planck's constant using Light Emitting Diodes.
8. Study of input and output Transistor characteristics and hence calculate input resistance, and output resistance.
9. n & I by Torsional pendulum (radius of the wire, mass and dimensions of the regular bodies to be given).
10. Young's modulus of a beam by Single Cantilever experiment.
11. Determination of spring constants in Series and Parallel combination.
12. Study Series and parallel LCR resonance and hence Calculate inductance, band width and quality factor using series LCR Resonance.
13. Young's modulus by uniform bending.
14. Study of I-V characteristics of Zener diode and determine the knee voltage and breakdown voltage.

Course Outcomes:

Upon completion of this course, students will be able to

- Apprehend the concepts of interference of light, diffraction of light, Fermi energy and magnetic effect of current
- Understand the principles of operations of optical fibers and semiconductor devices such as Photodiode, and NPN transistor using simple circuits
- Determine elastic moduli and moment of inertia of given materials with the help of suggested procedures
- Recognize the resonance concept and its practical applications
- Understand the importance of measurement procedure, honest recording and representing

the data, reproduction of final results

CIE for the practical component

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 45% of the maximum marks (23 marks out of 50). The minimum passing marks for the SEE is 35% of the maximum marks (18 marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum and total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

CIE for the practical component

- On completion of every experiment in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
- The 25 marks are for conducting the experiment and preparation of the laboratory record,10 marks for individual evaluation (which includes viva voce), (the average of total experiments}
- The 15 marks shall be for the test conducted at the end of the semester, for the subject (duration of 1 hour 15 minutes)

SEE for the practical component

- SEE marks for the practical course is 50 marks
- All laboratory experiments are to be included for the practical exam
- Break up marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners
- Students can pick one question (experiment) from the questions lot prepared by the examiners
- General rubrics suggested for SEE are mentioned here write up 15%, conduction procedure and result is 70% and viva voce 10% of maximum marks.
- Practical SEE will be conducted by University as per the scheduled time table, for the subject **(duration 02 hours).**

Web links and Video Lectures (e-Resources):

https://www.britannica.com/technology/laser,k
https://nptel.ac.in/courses/115/102/115102124/
https://nptel.ac.in/courses/115/104/115104096/
http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html
https://onlinecourses.nptel.ac.in/noc20_mm14/preview

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning :

- http://nptel.ac.in https://swayam.gov.in
- https://www.vlab.co.in/participating-institute-amrita-vishwa-vidyapeetham

Dt 12/08/2018

A meeting of Board of Studies (BoS) is conducted to 1) Finalization of the choice based credit scheme (CBCS) for the post graduate course (M.Sc.)
2) Finalization of scheme and evaluation of I, II, III and IV Semester for the M.Sc. physics course
3) Finalization of Syllabus of I, II, III, IV Semester for the M.Sc. physics course and B.Tech course on 12/08/2018 at 11:00 am in University Meeting Hall, Main building. Sharnbasva University, Kalaburagi

The following members were present in the meeting

Internal member

1. Dr. Anilkumar Bidve Chairman
2. Dr. Nagbasavanna Kuragod Member

External member

1. Dr. M.V.N. Ambika Prasad Member
2. Dr. Bharat Kumar Member
3. Prof. Praveen B. Chodri Member
4. Prof. Revansidappa Member
5. Prof. Shivaleela Waddankeri Member
6. Prof. Vidyalaxmi Reddy Member
7. Prof. Danamma Hiremath Member

The meeting resolved to accept the scheme and evaluation and Syllabus proposed the department of physics, Faculty of Science and Technology, Sharnbasva University, Kalaburagi.

① Engg. Physics (18PHY12/22) for the B.Tech first year course as per CBCS was framed in the last meeting was held on 12/08/2018, but it was not finalised, today it is finalised with lot of deliberation and discussions during the meeting of the board of Study in Engg. Physics for

approval and implementation from the academic year 2018-19 and onwards.

2) For Engg. Physics Lab (18PHYL16/26) in previous meeting only 06 experiments from each part and there are totally two parts, part A and B total 12 experiments were there but today BOS meeting it was unanimously decided that to add one expt to each part hence total expts are 14 (fourteen)

All 30/09/2018

A meeting of Board of Studies (BOS) is conducted to
1) finalization of the choice based credit scheme (CBCS) for the post graduate course.
2) finalization of scheme and evaluation of I, II, III & IV Semester for the M.Sc. physics course.
3) finalization of syllabus of I, II, III & IV Semester for the M.Sc. physics course.
on 30/09/2018 at 11:00 am in University Meeting Hall, Main building, Sharnbasva University, Kalaburagi.

The following members were present in the meeting

Internal member

1) Dr. Anilkumar Bidve	Chairman	
2) Dr. Nagbasavanna Kuragol	Member	

External member

1) Dr. M.V.N. Ambika Prasad	Member	
2) Dr. Bharat Kumar	Member	3/12/18
3) Prof. Praveen B. Chondi	Member	
4) Prof. Revanasidappa	Member	
5) Prof. Shivaleela Waddankeri	Member	
6) Prof. Vijayalaxmi Reddy	Member	
7) Prof. Danamma Hiremath	Member	

The meeting resolved to accept the scheme and evaluation and syllabus proposed the department of physics, faculty of science and technology, Sharnbasva University, Kalaburagi.

115 Glorious Years

Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's

Estd 1903, 115 Years of Glorious history inscribed in the yemon service to the field of education

Poojya Doddappa Appa
Founder President
Sharnbasveshwar
Vidya Vardhak Sangha

Sharnbasva University

Kalaburagi-585 103
Karnataka - India
Estd. : 2017

ಶರಣಬಸವ ವಿಶ್ವವಿದ್ಯಾಲಯ

ಕಲಬುರಗಿ-೫೮೫ ೧೦೩
ಕರ್ನಾಟಕ - ಭಾರತ
ಸ್ಥಾಪನೆ : ೨೦೧೭

Poojya Dr. Sharnbaswappa App
Chancellor, Sharnbasva Universit
President, Sharnbasveshwa
Vidya Vardhak Sangh

A Private University enacted by Govt. of Karnataka as "Sharnbasva University Act 2012"
Karnataka Act No. 17 of 2013. Notification No. ED 144 URC 2016 dated 29/07/2017

www.sharnbasvauniversity.edu.in

Correspondence Address : Sharnbasveshwar College Campus, Kalaburagi-585 103.
Main Campus. Vidya Mandir, Sharana Sirasagi, Beside High Court, Kalaburagi

Email : sharnbasvauniversity@gmail.com

Ref.No.

Date: 04-04-22

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF CHEMISTRY

List of BOS Members

Sl. No.	Name	Designation
1	Dr. Nirdosh Patil Associate Professor and Chairman, Dept. of Chemistry, Appa Institute of Engg. and Technology, Kalaburagi.	**Chairman**
2	Dr.Vijayakumar Durg Professor, Department of Chemistry BKIT, Bhalki.	Member
3	Dr.Vijaykumar Hiremath Associate Professor, Department of Chemistry Poojya Doddappa Appa College of Engineering, Kalaburagi	Member
4	Dr. Konkallu Hanumae Gowd Assistant Professor, Dept. of Chemistry, CUK, Kalaburagi.	Member
5	Prof.Siddanagouda Patil Assistant Professor, Department of Chemistry Veerappa Nisty Engineering and Technology, Shorapur	Member
6	Prof.Parvati G Assistant Professor, Dept. of Chemistry, Appa Institute of Engg. and Technology, Kalaburagi.	Member
7	Prof.Shweta Patil Assistant Professor, Dept. of Chemistry, Appa Institute of Engg. and Technology, Kalaburagi.	Member
8	Prof.Ambika Busange Assistant Professor, Dept. of Chemistry Godutai Engg College for Women, Kalaburagi	Member

Chancellor

Sharnbasva University, Kalaburagi

* Dr. Nitesh patil

(1) Dr. Vijay. A. Utroumata Received.

2) Dr. Vijayakumar Durg Received always.

3) Siddanna Gowda patil Recieved 07/10/18

4) Dr. Konkallu Hanumae Gowd

5) Shweta patil

(6) Parvati.

Sharnbasva University, Kalaburagi

Scheme of Teaching and Examination 2018-19

Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2018-19)

I / II SEMESTER B.Tech (Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week		Examination				Credits
				T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	18MAT11/21	Engineering Mathematics	Mathematics	4		3	50	50	100	04
2	18CHE12/22	Engineering Chemistry	Chemistry	4		3	50	50	100	04
3	18ELN13/23	Basic Electronics Engineering	Electronics & Communication Engineering	3		3	50	50	100	03
4	18ELE14/24	Basic Electrical Engineering	Electrical & Electronics Engineering	3		3	50	50	100	03
5	18CEDL15/25	Computer Aided Engineering Drawing	Mechanical Engineering	1	4	3	50	50	100	03
6	18CHEL16/26	Engineering Chemistry Lab	Chemistry		3	3	50	50	100	01
7	18EECL17/27	Electronics & Electrical Lab	Electronics & Communication Engineering		3	3	50	50	100	01
8	18ES18/28	Environmental Studies	Civil Engineering	1		1	50	50	100	AC *
9	18PROJ19/29	Project I/II	--		2	2	50	50	100	01
		Total		**16**	**12**	**25**	**450**	**450**	**900**	**20**

*Audit Course

Dr. Hirdesh Patil

(1) Dr. K. Hanumae Gowda

(2) Dr. Vijayakumar Dey 9/10/18

(3) Siddanna Gowda patil

(4) Dr. Vijay. A. Hiremath

(6) Shweta Patil

(7) Parvati

SHARNBASVA UNIVERSITY
ENGINEERING CHEMISTRY

(Common to all branches)
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the Academic Year 2018-19)

Course Code: 18CHE12/22 | **CIE Marks: 50**
Contact Hours/Week: 04 | **SEE Marks: 50**
Total Hours: 50 | **Exams. Hours: 03**
Semester: I/II | **Credits: 04**

Course Learning Objectives:

This course (**18CHE12/22**) will enable students to

- Master the basic knowledge of engineering chemistry for building technical competence in industries, research and development.
- To develop knowledge in the fields of use of free energy in chemical equilibrium, electrochemistry and energy storage systems, Corrosion and metal finishing.
- To understand the importance of Chemical fuel properties and applications and to understand the concept synthesis properties and applications of polymers
- To understand the importance of water chemistry and green chemistry
- To develop knowledge in the fields of Instrumental methods of analysis and Nanomaterials.

MODULES

MODULE- I: Electrochemistry and Energy storage systems

Electrochemical Systems: Derivation of Nernst equation for single electrode potential. Reference electrodes: Introduction, construction, working and applications of Calomel electrode. Ion-selective electrode – Definition, construction and principle of Glass electrode, and determination of pH using glass electrode. Electrolyte concentration cells, numerical problems.

Fuel Cells: Introduction, differences between conventional cell and fuel cell, limitations & advantages. Construction, working & applications of methanol-oxygen fuel cell with H_2SO_4 electrolyte, and solid oxide fuel cell (SOFCs).

Energy storage systems: Introduction, classification - primary, secondary and reserve batteries.Construction, working and applications of Ni-MH and Li-ion batteries, Ni-Cd cell.

10 Hours

(1) Dr. Vijay A. Hiremath
(2) Dr. Vijayakumar Durg
(3) Dr. K. Hanumanagouda
(4) Siddanagouda patil
(5) Dr. Nirdosh patil
(6) Shweta. patil
(7) Parvati

MODULE-II: Corrosion and Metal finishing

Corrosion: Introduction, Electrochemical theory of corrosion, Factors affecting the rate of corrosion: ratio of anodic to cathodic areas, nature of metal, nature of corrosion product, nature of medium – pH, conductivity and temperature. Types of corrosion - Differential metal and Differential aeration - pitting and water line). Corrosion control: Metal coatings - Galvanization and Tinning. Cathodic protection - sacrificial anode and impressed current methods.

Metal finishing: Introduction, Technological importance. Electroplating: Introduction, principles governing electroplating-Polarization, decomposition potential and overvoltage. Electroplating of chromium (hard and decorative) and electroplating of nickel (Watt's method). Electroless plating: Introduction, electroless plating of copper, distinction between electroplating and electroless plating processes.

10 - Hours

MODULE-III: ~~Energy Systems~~ Chemical fuels and Polymers

Chemical Fuels: Introduction, classification, definitions of CV, LCV, and HCV, determination of calorific value of solid/liquid fuel using bomb calorimeter, numerical problems. Knocking of petrol engine – Definition, mechanism, ill effects and prevention. Power alcohol, unleaded petrol and biodiesel.

Polymers: Introduction, types of polymerization: addition and condensation, mechanism of polymerization- free radical mechanism taking vinyl chloride as an example. Synthesis, properties and applications of PMMA (plexi glass), Polyeurethane, Adhesives: Introduction, synthesis, properties and applications of epoxy resin. Polymer composites: Introduction, synthesis, properties and applications of Kevlar. Conducting polymer: Introduction,synthesis of polyaniline and polyacetylene with applications.

10 - Hours

MODULE IV: Water Chemistry & green chemistry.

Water Chemistry: Introduction, sources and impurities of water; boiler feed water, boiler troubles with disadvantages -scale and sludge formation, boiler corrosion (due to dissolved O_2, CO_2 and $MgCl_2$). Sources of water pollution, Sewage, Definitions of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD, numerical problems on COD. Chemical analysis of water: Sulphates (gravimetry) and Fluorides (colorimetry). Sewage treatment: Primary, secondary (activated sludge) and tertiary methods. Softening of water by ion exchange process. Desalination of sea water by reverse osmosis.

Green chemistry: Principle and applications of green chemistry.

10 – Hours

1. Dr. Vijay A. Hiremath
2. Dr. Vijayakumar Durg
3. Dr. K. Hanumanagouda
4. Siddanna Gowda patil
5. Dr. Nirdosh patil
6. Shweta. patil
7. Parvati

MODULE-V:Instrumental methods of analysis and Nanomaterials

Instrumental methods of analysis: Theory, Instrumentation and applications of UV Spectro photometer, Chromatography (TLC) Flame Photometry, Potentiometry and Conductometry (Strong acid with a strong base)

Nanomaterials: Introduction, size dependent properties (Surface area, Electrical, Optical, Catalytic and Thermal properties). Synthesis of nanomaterials: Top down and bottom up approaches, Synthesis by Sol-gel, precipitation and chemical vapour deposition, Nanoscale materials: Fullerenes, Carbon nanotubes and Dendrimers – properties and applications.

10 - Hours

Course Outcomes:

At the end of the course the students are able to understand

CO1: Basics of electrochemistry and its applications to batteries.

CO 2: Identify the nature of corrosion, its control and to develop resistance to corrosion by electroplating and electroless plating

CO3: Identify the importance of chemical fuel, basic concept of preparation of polymer and its applications.

CO4: Environmental pollution, waste management and water chemistry.

CO5: Different techniques of instrumental methods of analysis. Fundamental principles of nanomaterials.

Question paper pattern:

Note:- The SEE question paper will be set for 100 marks and the marks will be proportionately reduced to 50.

- The question paper will have **ten** full questions carrying equal marks.
- Each full question carries **20** marks.
- There will be **two** full questions (with a **maximum** of **three** sub questions) from each module.
- Each full question will have sub question covering all the topics under a module.
- The students will have to answer **five** full questions, selecting **one** full question from each module.

Text Books:

1. P.C. Jain & Monica Jain. **"Engineering Chemistry"**, Dhanpat Rai Publications, New Delhi (2015 Edition).
2. S. S. Dara, A textbook of Engineering Chemistry, 10th Edition, S Chand & Co., Ltd., New Delhi, 2014.

(1) Dr. Vijy. A. Hiremath
(2) Dr. Vijayakumar Durg
(3) Dr. K. Hanumanaa Gowd
(4) Siddanna Gouda patil
(5) Dr. Hiralesh Patil
(6) Shweta patil
(7) Parvati

3. Physical Chemistry, by P. W. Atkins, Oxford Publications (Eighth edition-2006).

Reference books:

1. O.G. Palanna, **"Engineering Chemistry"**, Tata McGraw Hill Education Pvt. Ltd. New Delhi, Fourth Reprint (2015- Edition).

2. R.V. Gadag & A. Nityananda Shetty., **"Engineering Chemistry"**, I K International Publishing House Private Ltd. New Delhi (2015- Edition).

3. **"Wiley Engineering Chemistry"**, Wiley India Pvt. Ltd. New Delhi. Second Edition-2013.

4. B. Jaiprakash, R. Venugopal, Sivakumaraiah and Pushpa Iyengar, Chemistry for Engineering Students, Subhash Publications, Bengaluru, (2015- Edition).

*****

(1) Dr. Vijay. A. Hiremath
(2) Dr. Vijayakumar Duy
(3) Dr. K. Hanumae Gowd
(4) Siddanna Gowda patil
(5) Dr. Nirdosh patil
(6) Shweta. patil
(7) Parvati

ENGINEERING CHEMISTRY LAB

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the Academic Year 2018-19)

Course Code :18CHEL16/26
Contact Hours/Week : 02
Total Hours: 38
Semester: I/II

CIE Marks : 50
SEE Marks: 50
Exams. Hours: 03
Credits: 01

Course objectives:

Course objectives: To provide students with practical knowledge of

- Quantitative analysis of materials by classical methods of analysis.
- Instrumental methods for developing experimental skills in building technical competence.

Instrumental Experiments

1. Potentiometric estimation of FAS using standard $K_2Cr_2O_7$ solution.
2. Conductometric estimation of acid mixture.
3. Determination of Viscosity co-efficient of the given liquid using Ostwald's viscometer.
4. Colorimetric estimation of Copper.
5. Determination of P^{ka} of the given weak acid using pH meter.
6. Flame photometric estimation of sodium and potassium.
7. Determine the surface tension of a given liquid at room temp using stalgmometer by drop number method.

Volumetric Experiments

1. Estimation of Total hardness of water by EDTA complexometric method.
2. Estimation of CaO in cement solution by rapid EDTA method.
3. Determination of percentage of Copper in brass using standard sodium thiosulphate solution.
4. Determination of COD of waste water.
5. Estimation of Iron in haematite ore solution using standard $K_2Cr_2O_7$ solution by external indicator method.
6. Determination of alkalinity of the given Water sample
7. Determinationof percentage of chlorine in bleaching powder by Iodometric method

(1) Mr. Vijay A. Hiremath
(2) Dr. Vijayakumar Durg
(3) Dr. K. Hanumanagouda
(4) Siddanna Gouda Patil
(5) Dr. Nirdosh Patil
(6) Shweta Patil
Parvati Patil

Course outcomes: On completion of this course, students will have the knowledge in,

CO1: Principles and procedure.(Knowledge)

CO2: Understanding the reactions.(Comprehension)

CO3: Applications

CO 4: Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.(Analysis)

CO5: Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.(Synthesis)

Conduction of Practical Examination:

a. Examination shall be conducted for 100 marks, later reduced to 50 marks.
b. All experiments are to be included for practical examination.
c. One instrumental and another volumetric experiment shall be set.
d. Different experiments shall be set under instrumental and a common experiment under volumetric.

Reference Books:

1. G.H. Jeffery, J. Bassett, J. Mendham and R.C. Denney, "Vogel's Text Book of Quantitative Chemical Analysis"
2. O.P. Vermani & Narula, "Theory and Practice in Applied Chemistry", New Age International Publishers.
3. Gary D. Christian, "Analytical chemistry", 6th Edition, Wiley India.

*****

(1) Dr. Vijay. A. Hiremath
(2) Dr. Vijayakumar Durg Shwary
(3) Dr. K. Hanumanal Gaud
(4) Siddanna Gavade patil
(5) Dr. Nirdosh Patil
(6) Shweta patil
(7) Parvati

DRAFT SCHEME

Sharnbasva University, Kalaburagi

Scheme of Teaching and Examination 2021-22

Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2021-22)

I / II SEMESTER B.Tech (Physics/Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week				Examination				Credits
				Theory Lecture	Tutorial	Practical/Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	18MATDIP31	Additional Mathematics-I	Mathematics	2	1	---	---	3	50	50	100	00
2	18MATDIP41	Additional Mathematics-II	Mathematics	2	1	---	---	3	50	50	100	00
Total				04	02	--	--	06	100	100	200	00

1) Dr. T.V. Biradar
2) Dr. N.B. Naduvinamani –
3) Dr. Sharangouda Malipatil –
4) Dr. Mahantesh Swamy –
5) Dr. Shivalingappa Patil –
6) Dr. G. Janardhan Reddy –
7) Dr. Veena. P. H –
8) Dr. Ashok Patil –
9) Prof. T. Venkatesh –
10) Dr. Suvarna Saraf –
11) Dr. Swati Kalshetty –
12) Prof. Jaysudha. N –
13) Dr. Suresh Biradar –
14) Dr. Shreedevi Kalyan –
15) Dr. Jagadish Patil –
16) Prof. Sharanayya Swami –
17) Prof. Ramesh Kempepatil –

Sharnbasva University, Kalaburagi

Scheme for B.Tech., Second Year Program from the Academic Year: 2018-19

All the B.Tech., branches offered by the University

B.Tech. Third and Fourth semester

Sl. No.	Course Code	Course Title	Teaching Department/ Paper Setting Board	Teaching hours/week				Examination				Credits
				Theory/ Lecture	Tutorial	Practical/ Drawing	Activities	Duration	CIE Marks	SEE Marks	Total Marks	
1	18MAT31	Engineering Mathematics - III	Mathematics	4		0	0	3	50	50	100	4
	18MAT41	Engineering Mathematics - IV		4		0	0	3	50	50	100	4

Sharnbasva University, Kalaburagi

Scheme for B.Tech., First Year Program from the Academic Year: 2018-19

All the B.Tech., branches offered by the University

B.Tech. First and Second semester

Sl. No.	Course Code	Course Title	Teaching Department/ Paper Setting Board	Teaching hours/week				Examination				Credits
				Theory/ Lecture	Tutorial	Practical/ Drawing	Activities	Duration	CIE Marks	SEE Marks	Total Marks	
1	18MAT11	Engineering Mathematics - I	Mathematics	4		0	0	3	50	50	100	4
	18MAT21	Engineering Mathematics - II		4		0	0	3	50	50	100	4

ENGINEERING MATHEMATICS-I

(Common to all branches)
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2018-19)

Course Code : 18MAT11
Contact Hours/Week : 04
Total Hours:50
Semester : I

CIE Marks : 50
SEE Marks: 50
Exam Hours:03
Credits: 04

Course Learning Objectives:

This course Calculus and Linear Algebra (18MAT11) will enable students:

- To familiarize the important tools of calculus and differential equations that are essential in all branches of engineering.
- To develop the knowledge of matrices and linear algebra in a comprehensive manner.

MODULE-I

Differential Calculus-1:

Successive Differentiation: Standard Forms of nth derivative(with proof), examples on standard functions, Leibnitz Theorem (without proof) examples, Taylor's and Maclaurin's series expansions for one variable (statements only), Indeterminate forms.

10 - Hours

MODULE-II

Differential Calculus-2:

Polar Curves: Expression for Angle between radius vector and tangent, length of perpendicular from pole to the tangent, angle between two polar curves, Pedal Equation of polar curves and problems.

Derivative of arc length: Cartesian, parametric and polar form(without proof),problems.
Radius of Curvature: Radius of Curvature for Cartesian, parametric, polar form and pedal form (Without proof) and problems.

10 - Hours

MODULE-III

Differential Calculus-3:

Definitions of Partial Differentiation, Direct and Indirect partial derivatives, Symmetric functions, Homogeneous function and Euler's theorem on homogeneous function.

Differential Equation : preamble to differential equations, Exact and Reducible to exact differential equation, Bernoulli's linear differential equation. Applications of first order first degree differential equations:Newton's law of cooling, Law of decay and growth. Orthogonal trajectories.

10 - Hours

MODULE-IV

Integral Calculus:

Reduction Formulae of $\int_0^{\pi/2} Sin^n x\, dx$, $\int_0^{\pi/2} Cos^n x\, dx$, and $\int_0^{\pi/2} Sin^m x\, Cos^n x\, dx$ and problems.

Double and Triple integral examples, Evaluation of double integral over a specific region, changing the order of integration , changing into polar form. Application of double and triple integrals to find area and volume.

10 - Hours

MODULE-V

Matrices:

Preamble to matrices , Rank of matrix, Test of consistency of homogeneous and non-homogeneous system of equations by rank, trivial and non trivial solutions, solution of linear equations by Gauss Elimination method, Gauss-Seidal method, Eigen values and Eigen vector, Quadratic form, Reduce the quadratic form into diagonalization by congruent method, Cayley-Hamilton theorem, Rayleigh's Power method to find largest Eigen value and corresponding Eigen vector.

10 - Hours

Text Books:

1. B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.

2. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

Reference books:

1. C.Ray Wylie, Louis C.Barrett : "Advanced Engineering Mathematics", 6th Edition.

2. McGraw-Hill Book Co., New York, 1995.

2. James Stewart : "Calculus –Early Transcendentals", Cengage Learning India Private Ltd., 2017.

3. B.V.Ramana: "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.

4. Srimanta Pal & Subobh C Bhunia: "Engineering Mathematics", Oxford University Press,3rd Reprint, 2016.

5. Gupta C.B., Singh S.R. and Mukesh Kumar: "Engineering Mathematics for Semester I & II", Mc-Graw Hill Education (India) Pvt.Ltd., 2015.

Web links and Video Lectures:

1. http://nptel.ac.in/courses.php?disciplineID=111
2. http://www.class-central.com/subject/math(MOOCs)
3. http://academicearth.org.

Course Outcomes:

On completion of this course, students are able to:

1: Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.

2: Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobians.

3: Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.

4: Solve first order linear/nonlinear differential equation analytically using standard methods

5: Make use of matrix theory for solving system of linear equations and compute eigenvalues and Eigenvectors required for matrix diagonalization process.

Question Paper Pattern:

- The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
- The question paper will have ten full questions carrying equal marks.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of four sub questions) from each module
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

*****

G.J. Reddy

Swami

ENGINEERING MATHEMATICS-II

(Common to all branches)

|As per Choice Based Credit System (CBCS) scheme|

(Effective from the academic year 2018-19)

Course Code : 18MAT21
Contact Hours/Week : 04
Total Hours:50
Semester : II

CIE Marks : 50
SEE Marks: 50
Exam Hours:03
Credits: 04

Course Learning Objectives:

This course viz., Advanced Calculus and Numerical Methods (18MAT21) aims to prepare the students:

- To familiarize the important tools of vector calculus, ordinary/partial differential equations and power series required to analyze the engineering problems.
- To apply the knowledge of interpolation/extrapolation and numerical integration technique whenever analytical methods fail or very complicated, to offer solutions.

MODULE-I

Differential Equation-1:-

Solution of non-linear differential equation of first order : Solvable for p, x , y and Clairaut's equation. Solution of second and higher order Ordinary linear differential equation with constant co-efficients, Inverse Differential operator method.

10 - Hours

MODULE-II

Differential Equations-2:- Method of variation of parameters. Solution of second & higher order Ordinary linear differential equation with variable co-efficients: Cauchy Differential Equation and Legendre's Differential equation. Solution of homogeneous LDE by Power series solution Method.

10 - Hours

MODULE-III

Partial Differential Equations(PDE's):- Solution of Non-homogeneous PDE by direct integration, solution of homogeneous PDE with respect to one independent variable only. Derivation of one dimensional wave equation and heat equation and solution by methods of separation of variables.

10 - Hours

MODULE-IV

Complex valued function, limit, continuity, differentiability, analytic functions. Cauchy-Riemann Equation in Cartesian, Polar form. Harmonic and orthogonal property and problems.

Vector Differentiation: Scalar and Vector point functions, Gradient, Divergence, Curl, Laplacian operator and problems. Solenoidal, Irrotational vectors.

10 - Hours

MODULE-V

Vector line integral, Vector Surface integral: Greens theorem, Stokes theorem. Volume Integral: Gauss divergence theorem.

Improper Integrals: Beta and gamma functions and its properties and examples.

10 – Hours

Text Books:

1. B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.

2. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed.(Reprint), 2016.

Reference books:

1. C.Ray Wylie, Louis C.Barrett : "Advanced Engineering Mathematics", 6th Edition.

2. McGraw-Hill Book Co., New York, 1995. 2. James Stewart : "Calculus –Early Transcendentals", Cengage Learning India Private Ltd., 2017.

3. B.V.Ramana: "Higher Engineering Mathematics" 11th Edition, Tata McGraw-Hill, 2010.

4. Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics",Oxford University Press,3rd Reprint,2016.

5. Gupta C.B., Singh S.R. and Mukesh Kumar: "Engineering Mathematics for Semester I & II", Mc-Graw Hill Education (India) Pvt.Ltd., 2015.

Web links and Video Lectures:

1. http://nptel.ac.in/courses.php?disciplineID=111
2. http://www.class-central.com/subject/math(MOOCs)
3. http://academicearth.org/

Course Outcomes:

On completion of this course, students are able to:

1: Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.

2: Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.

3: Construct a variety of partial differential equations and solution by exact methods/method of separation of variables.

4: Explain the applications of infinite series and obtain series solution of ordinary differential equations.

5: Apply the knowledge of numerical methods in the modeling of various physical and engineering phenomena.

Question Paper Pattern:

- The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
- The question paper will have ten full questions carrying equal marks.
- Each full question carries 20 marks.
- There will be two full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

*****

SHARNBASVA UNIVERSITY, KALABURAGI

ENGINEERING MATHEMATICS-III

(Common to all branches)

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2019-20)

Course Code : 18MAT31
Contact Hours/Week : 04
Total Hours:50
Semester : III

CIE Marks : 50
SEE Marks: 50
Exam Hours:03
Credits: 04

Course Learning Objectives:

This course will enable students to:

- Introduce most commonly used analytical and numerical methods in the different engineering fields.
- Learn Laplace transform and Z-transforms, statistical methods, numerical methods.
- Solve the problem on Interpolation.
- To discuss the random variable and associated probability distributions.

MODULE-I

LAPLACE TRANSFORMS : Definition Transforms of Elementary functions, properties of periodic function, Unit step function, Unit impulse function.

INVERSE LAPLACE TRANSFORMS : Definition, Convolution Theorem(without proof), Finding Inverse Laplace transform by convolution Theorem. Solution of Linear Differential equations using Laplace Transforms and Applications(5 Assignment Problem).

MODULE-II

Z- TRANSFORMS: Difference Equations ,Basic definitions, Damping rule, Shifting rule, Initial and Final Value theorems(without proof) and problems. Inverse Z-transforms. Applications of Z-transforms to solve difference equation(5 Assignment Problem).

MODULE-III

STATISTICAL METHODS: Correlation-karl Pearson's co-efficient of correlation problems. Regression analysis lines of regression (without proof)-problems.

CURVE FITTING: Curve fitting by the method of least square. Fitting of the curves of the form $y = ax + b, y = ax^2 + bx + c$ & $y = ae^{bx}$.

Numerical Methods: Numerical solution of algebraic and transcendental equations by Regula - Falsi Method and Newton-Raphson method. (5 Assignment Problem).

MODULE-IV

FINITE DIFFERENCE: Forward and Backward differences, Newton's forward and backward interpolation formulae. Divided difference-Newton's divided difference formulae. Lagrange's-interpolation formula and inverse interpolation formula(all formula without proof) problems.

Dr S. S. Patil

Mahantesh Swamy.

(Dr. Suresh)

Kabbeth
Dr. Swati Kabbeth

Swami
(Sharanayya Swami)

(Dr Sharanagouda Malpatil)

Dr. Ashok patil

(Dr G. Jayaraksha Reddy)

NUMERICAL INTEGRATION: Simpsons $(\frac{1}{3})^{rd}$, $(\frac{3}{8})^{th}$ rules, Weddle's rule (without proof) problems. (5 Assignment Problem).

MODULE-V

Probability Distribution: Random variables(discrete and continuous) probability mass/density functions. Binomial distribution, Poisson distribution. Exponential and Normal distributions. Problems. (5 Assignment Problem).

Course outcomes: On completion of this course, students are able to:

- Know the use of Laplace transform and inverse Laplace transform in signal and image processing.
- Explain the general linear system theory for continuous time signals and digital signal processing using the Z-transform.
- Employ appropriate numerical methods to solve algebraic and transcendental equations.
- Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various application in the field of electro-magnetic and gravitational fields and fluid flow problems.

Question paper pattern:

- The question paper will have ten questions.
- Each full Question consisting of 16 marks
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
2. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons,10th Ed., 2015.

Reference Books:

1. N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7th Ed., 2010.
2. B.V.Ramana: "Higher Engineering Mathematics" Tata McGraw-Hill, 2006.
3. H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics", S. Chand publishing, 1st edition, 2011.

Web Link and Video Lectures:

1. *http://nptel.ac.in/courses.php?disciplineID=111*
2. *http://www.khanacademy.org/*
3. *http://www.class-central.com/subject/math*

G. J. Reddy
(Dr. G. Janardhana Reddy)

Dr S. B. Patil

(Dr Sharanagoud Malipatil)

Mahantesh Swamy.
Mahantesh Swamy

(Dr. Suresh)

Swami
(Sharanappa Swami)

Ashok
Dr. Ashok patil

SHARNBASVA UNIVERSITY, KALABURAGI

ENGINEERING MATHEMATICS-IV

(Common to all branches)

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2018-19)

Course Code : 18MAT41	**CIE Marks : 50**
Contact Hours/Week : 04	**SEE Marks: 50**
Total Hours:50	**Exam Hours:03**
Semester : IV	**Credits: 04**

Course Learning Objectives:

This course will enable students to:

- Learn Fourier series and Fourier transforms.
- Conversant with numerical methods to solve ordinary differential equations, complex analysis, joint probability distribution and stochastic processes arising in science and engineering.

MODULE-I

Fourier Series: Periodic functions, Dirichlet's condition, Fourier Series of periodicfunctions with period 2π and with arbitrary period 2c. Fourier series of even and odd functions Half range Fourier Series, practical harmonic analysis(5 Assignment Problem).

MODULE-II

Fourier Transforms: Infinite Fourier transforms, Fourier sine and cosine transforms. Inverse Fourier-transform (5 Assignment Problem).

Complex line Integrals: Cauchy's Integration theorem, Cauchy integral formula, Laurent's Series, types of singularities. Residue, Poles, Cauchy's Residue theorem (without proof) and Problems.

Transformations: Bilinear transformations and problems.

MODULE-III

Numerical Methods: Numerical solution of ordinary differential equations of first order an d first degree, Taylor's series method, modified Euler's-method

Runge Kutta method of fourth order. Milne's and Adams- Bashforth predictor and corrector methods (No derivations of formulae). (5 Assignment Problem).

MODULE-IV

Numerical Methods: Numerical solution of second order ordinary differential equations, Runge- Kutta Method and Milne's Method, Numerical solution of P.D.E: Numerical solution of heat equation, wave equation , problems. (5 Assignment Problem).

MODULE-V

Joint probability distribution: Joint Probability distribution for two discrete random variables, expectation, covariance, correlation coefficient

Stochastic process: Stochastic processes, probability vector, stochastic matrices, fixed poin ts, regular stochastic matrices, Markov chains, higher transition probability-simple problems. (5 Assignment Problem)

(Dr. Suresh) (Mahantesh Swamy) Dr S. B. Patil G.J. Reddy (Dr. G Jayadhana Reddy) (Dr. Sharanagouda Malipatil) Dr. Swati Kabbetti (Sharanayya Swami) Dr. Ashok Patil

Course Outcomes: On completion of this course, students are able to:

- Know the use of periodic signals and Fourier series to analyze circuits and system communications.
- Explain the general linear system theory for continuous time signals and digital signal processing using the Fourier Transform.
- Solve first and second order ordinary differential equations arising in flow problems using single step and multistep numerical methods.
- Understand the analyticity, potential fields, residues and poles of complex potentials in field theory and electromagnetic theory.
- Describe bilinear transformation arising in aerofoil theory, fluid flow visualization and image processing.
- Solve problems on probability distributions relating to digital signal processing, information theory and optimization concepts of stability of design and structural engineering.
- Determine joint probability distributions and stochastic matrix connected with the multivariable correlation problems for feasible random events.
- Define transition probability matrix of a Markov chain and solve problems related to discrete parameter random process.

Question paper pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.
2. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons,10th Ed., 2015.

Reference Books:

1. N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers , 7th Ed., 2010.
2. B.V.Ramana: "Higher Engineering Mathematics" Tata McGraw-Hill, 2006.
3. H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics", S. Chand publishing, 1st edition, 2011.

Web Link and Video Lectures:

1. *http://nptel.ac.in/courses.php?disciplineID=111*
2. *http://www.khanacademy.org/*
3. *http://www.class-central.com/subject/math*

(G.J. Reddy)
Dr. G Jayashree Reddy

Dr S. B. Patil

Kabbur.

(Dr Sharanagouda Malipatil)

Mahantesh Swamy

(Dr. Suresh)

Swami
(Shivanayya Swami)

Dr. Ashok patil

DRAFT SCHEME

Sharnbasva University, Kalaburagi

Scheme of Teaching and Examination 2021-22

Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2021-22)

I / II SEMESTER B.Tech (Physics/Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week				Examination				Credits
				Theory Lecture	Tutorial	Practical/Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	18MATDIP31	Additional Mathematics-I	Mathematics	2	1	---	---	3	50	50	100	00
2	18MATDIP41	Additional Mathematics-II	Mathematics	2	1	---	---	3	50	50	100	00
Total				04	02	--	--	06	100	100	200	00

1) Dr. T.V. Biradar
2) Dr. N.B. Naduvinamani –
3) Dr. Sharangouda Malipatil –
4) Dr. Mahantesh Swamy –
5) Dr. Shivalingappa Patil –
6) Dr. G. Janardhan Reddy –
7) Dr. Veena. P. H –
8) Dr. Ashok Patil –
9) Prof. T. Venkatesh –
10) Dr. Suvarna Saraf –
11) Dr. Swati Kalshetty –
12) Prof. Jaysudha. N –
13) Dr. Suresh Biradar –
14) Dr. Shreedevi Kalyan –
15) Dr. Jagadish Patil –
16) Prof. Sharanayya Swami –
17) Prof. Ramesh Kempepatil –

SHARNBASVA UNIVERSITY, KALABURAGI

ADDITIONAL MATHEMATICS - I
(B.Tech. III semester Common to all branches)
(A Bridge course for Lateral Entry students of III Sem. B. Tech.)

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2019-20)

Course Code : 18MATDIP31
Contact Hours/Week : 03
Total Hours:40
Semester : III

CIE Marks : 50
SEE Marks: 50
Exam Hours:03
Credits: 00

Course Learning Objectives:

This course will enable students to:

- Acquire basic concepts of complex trigonometry, vector algebra, differential & integral calculus and vector differentiation.
- Evaluation of double and triple integrals.
- know the basic concepts of partial differential equations.
- To develop the knowledge of matrices and linear algebra in compressive manner.
- To understand the essential concept of linear algebra.

MODULE-I

Complex Trigonometry-1:

Complex Numbers: Definition and Properties . Modulus and Amplitude of complex number, Argand's diagram , De-Moivre's theorem (without proof)

Vector Analysis : Scalar and Vectors. Vector addition and subtraction. Multiplication of vectors (Dot and Cross products) Scalar and vector triple products- simple problems, Vector Differentiation : Gradient, Divergence and Curl.

8 - Hours

MODULE-II

Differential Calculus:

Review of successive differentiation. Formulae of N^{th} derivatives of standard functions- Leibnitz's theorem (without proof).

Polar Curves: Expression for Angle between radius vector and tangent, length of perpendicular from pole to the tangent, angle between two polar curves, Pedal Equation of polar curves and problems. Taylor' and Maclaurin's seires expansions.

8 - Hours

MODULE-III

Partial Differentiation :

Definitions of Partial Differentiation, Direct and Indirect partial derivatives, Symmetric functions, Homogeneous function and Euler's theorem on homogeneous function. Total Derivative of composite and implicit function. Jacobian.

8 - Hours

MODULE-IV

Integral Calculus:

Reduction Formulae of $\int_0^{\pi/2} Sin^n x\, dx$, $\int_0^{\pi/2} Cos^n x\, dx$, *and* Statement of Reduction formulae $\int_0^{\pi/2} Sin^m x\, Cos^n x\, dx$ and Problems.

Double and Triple integral- simple problems.

8 - Hours

MODULE-V

Linear Algebra:

Basic concepts of matrices- Rank of matrix by elementary row transformations- Echelon form. Consistency of system of Linear equations. Solution of system linear equations by Gauss Elimination method, Linear Transformation, Cayley- Hamilton theorem to compute inverse of matrix. Eigen values and Eigen vector, Largest Eigen value and corresponding Eigen vector by Reyleigh's Power method. **8 - Hours**

Course outcomes:

On completion of the course, students are able to:

- Understand the fundamental concepts of complex numbers and vector algebra to analyze the problems arising in related area.
- Use derivatives and partial derivatives to calculate rates of change of multivariate functions.
- Learn techniques of integration including double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region.
- Analyze position, velocity and acceleration in two or three dimensions using the calculus of vector valued functions.
- Recognize and solve first-order ordinary differential equations occurring in different branches of engineering.
- Solve systems of linear equations in the different areas of linear algebra.

Question paper pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Book:

B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, New Delhi, 43rd Ed., 2015.

Reference Books:

1. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed., 2015.

2. N.P.Bali and Manish Goyal: Engineering Mathematics, Laxmi Publishers, 7th Ed., 2007.

SHARNBASVA UNIVERSITY, KALABURAGI

ADDITIONAL MATHEMATICS - II

(B.Tech. III semester Common to all branches)
(A Bridge course for Lateral Entry students of IV Sem. B.Tech.)

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2019-20)

Course Code : 18MATDIP41	**CIE Marks : 50**
Contact Hours/Week : 03	**SEE Marks: 50**
Total Hours:40	**Exam Hours:03**
Semester : IV	**Credits: 00**

Course Learning Objectives:

This course will enable students to:

- Solve first order differential equations. .
- Solve second and higher order differential equations.
- Understand and solve the partial differential equation.
- To acquire the knowledge of elementary probability theory.
- Know the basic concepts of evaluation of double and triple integrals.

MODULE-I

Differential Equation-1:-

Solution of first order and first degree differential equations: Variable separable, Homogeneous, Exact and Reducible to exact differential equation, Linear differential equation. Applications of first order first degree differential equations: Newton's law of cooling.

8 - Hours

MODULE-II

Differential Equations-2:- Solution of second & higher order Ordinary linear differential equation with constant co-efficients. Method of variation of parameters. Solution of homogeneous LDE by Power series solution Method.

8 - Hours

MODULE-III

Partial Differential Equations(PDE's):- Formation of PDE by eliminating arbitrary constant & functions, Solution of Non-homogeneous PDE by direct integration, solution of homogeneous PDE with respect to one independent variable only. Derivation of one dimensional wave equation and heat equation and Various possible solution of wave & heat equations by methods of separation of variables.

8 - Hours

MODULE-IV

Improper Integrals: Beta and gamma functions and its properties and examples.

Evaluation of double integral over a specific region, changing the order of integration , changing into polar form.

8 - Hours

MODULE-V

Probability: Introduction , Sample space and Events. Axioms of Probability, Addition & Multiplication theorems. Conditional probability- illustrative examples. Baye's theorem-examples.

8 – Hours

Course Outcomes:

On completion of this course, students are able to:

- Solve first order differential equations in the different areas of Engineering.
- Solve second and higher order differential equations occurring in of electrical circuits, damped/un-damped vibrations.
- Solve second order partial differential equations in the different areas in the real world.
- Recall basic concepts of elementary probability theory and, solve problems related to the decision theory, synthesis and optimization of digital circuits.
- To find the surface area and volume of 3D objects.

Question paper pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks
- There will be 2 full questions (with a maximum of four subquestions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Book:

B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, 43rd Ed., 2015.

Reference Books:

1. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed., 2015.

2. N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers,7th Ed., 2007.