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Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's

Estd. 2017
ಸ್ಥಾಪನೆ : 2017



ಶರಣಬಸವ Sharnbasva ವಿಶ್ವವಿದ್ಯಾಲಯ University


Pooja Dr. Sharnbasappa Appaji — Pooja Matoshri Dr. Dakshayni S. Appa — Poojya Chiranjeevi Doddappa Appa — Poojya Matoshri Godutai Arvaji — Poojya Doddappa Appa

Kalaburagi - 585103, Karnataka - India
ಕಲಬುರಗಿ 585 103 ಕರ್ನಾಟಕ - ಭಾರತ

Phone / Fax No. 08472-277852, 277853, 277854, 277855 www.sharnbasvauniversity.edu.in - email : Sharnbasvauniversity@gmail.com

UGC Status: Letter No. F.8-29/2017(CPP-I/PU), Dated 20 Dec. 2017. Enlisted by the University Grants Commission, New Delhi, in the list of Private Universities in India.
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

Dr. Niranjan V. Nisty M.D.,Ph.D.
Vice-Chancellor
Sri N.S. Devarkal B.Sc.,M.A.,LL.B.
Pro Vice-Chancellor
Dr. V. D.Mytri M.Tech.,Ph.D.
Pro Vice-Chancellor
Dr. Anilkumar Bidve M.Sc.,Ph.D.
Registrar : Cell: 6362910165
Dr. Lingraj Shastri M.E.,Ph.D.
Registrar (Eval): Cell: 6362910167
Dr. Lakshmi Patil M.Tech.Ph.D.
Dean: Cell:6362910168
Dr.Basavaraj S.Mathapati
Dean:Cell:9448650187
Prof. Kiran Maka M.Tech.,(Ph.D.)
Finance Officer: Cell: 9632294958

Faculty of Engg. & Tech.
B.Tech Branches
1. Electronics & Comm. Engineering
2. Electrical & Electronics Engineering
3. Computer Science &Engineering
4. Civil Engineering.
5. Mechanical Engineering.
6. Energy Engineering.
M.Tech. Programmes
1. Computer Science & Engineering
2. Computer Network & Engineering
3. Digital Electronics
4. VLSI & Embedded Systems
5. Machine Design Engineering
6. Structural Engineering.
7. PG Diploma Data Science for Logistics
Faculty of Engg & Tech
(Exclusively for Women)
B.Tech Branches
1. Electronics & Comm. Engineering
2. Electrical & Electronics Engineering
3. Computer Science & Engineering
4. Artificial Iintelligence & Machine Learning
5. Civil Engineering
M.Tech. Faculty of Engg & Tech
1. Computer Science & Engineering
2. Digital Comm. & Network
3. Artificial Iintelligence & Data Science
Faculty of Architecture
1. B. Arch
Faculty of Business Studies
1. BBM-HR,Marketing, Finance
2. MBA -HR,Marketing, Finance
3. MBA -Hospital Administration
4. MBA-Tourism & Travel Mgmt.
5. M.Com.
6. BBA Logistics
(Exclusively for Women)
1. MBA-HR,Marketing, Finance
2. BBM-HR,Marketing, Finance
3. BMS-Aviation Service & Air Cargo
Faculty of Social Science
1. M.A. Journalism & Mass Comm.
Faculty of Science & Tech.
1. M.Sc.Physics 2. M.Sc.Maths
3. M.Sc.Zoology 4. M.Sc.Botany
Faculty of Computer Application
1. MCA 2. BCA
(Exclusively for Women)
1. BCA
Faculty of Fine Art
1. M.A.Visual Art
Faculty of Music
1. M.A.Music
Faculty of Languages
1. M.A.Kannada 2.M.A.English

Date:27-11-2021

Constitution of Board of studies in Chemistry

Reference: Hon. Vice Chancellor's approval dated 24-11-2021

With reference to the above cited subject and references, the Board of Studies in Chemistry has been constituted as below.

Board of Studies in Chemistry

Sl. No.	Name and address of the Member	Appointed As
1	Dr.Nirdosh Patil Professor and Chairman, B.Tech (Co-Ed) Dept. of Chemistry, Sharnbasva University. Kalaburagi	**Chairman**
2	Dr. R S Malipatil Associate Professor, Department of Chemistry, Poojya Doddappa Appa College of Engineering, Kalaburagi.	External Member
3	Dr. Kashinath K Professor, Department of Chemistry, K C T Engg. College Kalaburagi.	External Member
4	Dr. Shivakumar R Assistant Professor, Department of Chemistry, Govt. Degree College, Kalaburagi, Gulbarga University, Kalaburagi.	External Member
5	Dr. Parvati S G Assistant Professor, Department of Chemistry, B.Tech (Co-Ed) Sharnbasva University. Kalaburagi	Member
6	Prof. Shweta Patil Assistant Professor, Department of Chemistry, B.Tech (Co-Ed) Sharnbasva University. Kalaburagi	Member

1/2

Cont...2

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7	Prof.Ambika Bhusange Assistant Professor, Department of Chemistry, B.Tech (Women) Sharnbasva University. Kalaburagi	Member
8	Prof Anita R H Assistant Professor, Dept. of Chemistry, B.Tech (Women) Sharnbasva University. Kalaburagi	Member

Term of the nominated Members shall be two years from the date of this order.

Copy to:

1. Chairman, Board of Studies in Chemistry. Sharnbasva University, Kalaburagi.
2. All the Members of Board of Studies (BOS).
3. Registrar, Sharnbasva University, Kalaburagi.
4. Academic Dean Sharnbasva University, Kalaburagi.
5. Office copy

REGISTRAR

SHARNBASVA UNIVERSITY
ENGINEERING CHEMISTRY

(Common to all branches)
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2021-22)

Course code : 21CHE12/22
Contact hours /Week :04
Total Hours : 40
Semester : I/II

CIE Marks : 50
SEE Marks : 50
Exam hours : 03
Credits : 03

Course Learning Objectives:
This course (21CHE12/22) will enable students to

1.CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices, and its commercial applications.
2. CLO2: Understand the basic principles of corrosion and its prevention, metal finishing, and its technological importance
3. CLO3: Master the knowledge of synthesis, properties, and utilization of engineering materials like polymer, lubricants, and refractories.
4. CLO4: To understand the importance of water chemistry and apply the knowledge of green chemistry principles for the production of chemical compounds.
5. CLO5: Understand the theory, basic principle, and applications of volumetric analysis and analytical instruments. understanding the concepts of synthesis and characterization of nanomaterials.

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain methods of synthesis of nanomaterials.
3. Encourage collaborative (Group Learning) Learning in the class
4. Ask at least three HOTS (Higher-order Thinking) questions in the class, which promotes critical thinking
5. Adopt Problem Based Learning (PBL), which fosters students Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world and when that's possible, it helps improve the students' understanding.

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Prof. Shweta Patil
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Prof. Anita R.H.

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. Electrolyte concentration cells, numerical problems.

Fuel Cells: Introduction, differences between conventional cell and fuel cell, limitations & advantages. Construction, working and applications of methanol-oxygen fuel cell with Sulfuric acid electrolyte.

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

8 Hours

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 nickel (Watt's method). Electroless plating: Introduction, electroless plating of copper, distinction between electroplating and electroless plating processes.

8 Hours

MODULE-III: Chemical fuels, Solar energy 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.

Solar energy: Introduction, Construction, working and applications of Photovoltaic cell.

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

8 Hours

MODULE-IV: Water chemistry and Green chemistry

Water Chemistry: Introduction, boiler feed water, boiler troubles with disadvantages -scale and sludge formation, boiler corrosion (due to dissolved O_2 CO_2, and $MgCl_2$) sewage, definitions of biological oxygen demand (BOD) and chemical oxygen demand (COD), determination of COD, numerical problems on COD. Sewage treatment: primary, secondary (activated sludge) and tertiary methods. Desalination of sea water by reverse osmosis.

Cement:Types of cement,hardening and setting,deterioration of cement.

Green chemistry: Introduction, Principle and applications of green chemistry.

8 Hours

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Dr. Shivakumar R.

Dr. Parvati S. G.
Prof. Shweta Patil
Prof. Ambika S. B
Prof. Anila R. H.

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. **8 Hours**

Course Outcomes:

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

CO1. Basics of Electrochemistry and its applications to batteries.

CO2. Identify the nature of corrosion,its control and to develop resistance to corrosion by electroplating and Electrolessplating.

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

CO4. Environmental pollution, waste management , importance of cement and water chemistry.

CO5. Different techniques of Instrumental methods of analysis and 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.
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).

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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 Private Ltd. New Delhi second Edition -2013.
4. B.Jaiprakash, R.Venugopal, Sivakumaraiah & Pushpa Iyengar, Chemistry for Engineering Students, Subhash Publications, Bengaluru, (2015-Edition).

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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 (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	21CHE12/22	Engineering Chemistry	Chemistry	2	2	---	---	3	50	50	100	03
2	21CHEL16/26	Engineering Chemistry Lab	Chemistry	---	--	2	---	3	50	50	100	01
Total				**2**	**2**	**2**		**6**	**100**	**100**	**200**	**04**

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Prof. Ambik Bhusande.
Prof Anita. R.H.

SHARNBASVA UNIVERSITY
ENGINEERING CHEMISTRY LABORATORY

(Common to all branches)
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2021-22)

Course code : 21CHEL16/26
Contact hours /Week :02
Total Hours : 38
Semester : I/II

CIE Marks : 50
SEE Marks : 50
Exam 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 estimationof copper.
5. Determination of P^{Ka} of the given weak acid using p^H meter.

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.

Demonstration Experiments

1. Synthesis of nanomaterials by precipitation method.
2. Determinationof percentage of chlorine in bleaching powder by lodometric method

Course outcomes:

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

Dr. Nirdosh Patil
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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 A I, Text Book of Quantitative analysis, Dorling Kindersley (Idia) Pvt. Ltd. 35th Edition 2012.
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.2015

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Proceedings of the meeting of the Board of studies in Engg. Chemistry held on 27/11/2021 at 11:00am to draft the syllabus as for choice based credit system for B.Tech. first semester/second semester course for the academic year 2021-22 onwards.

The following members were present in the meeting

Members present :

1.	Dr. Nirdosh Patil.	Chairman	
2.	Dr. R.S. Malipatil.	Member	
3.	Dr. Kashinath K.	Member	
4.	Dr. Shivakumar R.	Member	
5.	Dr. Parvati S.G.	Member	
6.	Prof. Shweta Patil.	Member	
7.	Prof. Ambika S.B	Member	
8.	Prof. Anita R.H.	Member.	

A meeting of Board of studies is conducted

(1) Finalization of the choice based credit scheme (CBCS) for the undergraduate course

(2) Finalization of the syllabus and scheme of Engg chemistry (Theory and Lab) for first and second semester

The meeting resolved to accept the scheme and of evaluation and syllabus proposed the department of chemistry, Faculty of Engg. and Technology, Sharnbasva University Kalaburagi

Chairman
Basic Science
Technology (Coeducation)
University

Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's

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Under the aegis of the Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's
Phone / Fax No. 08472-277852, 277853, 277854, 277855 www.sharnbasvauniversity.edu.in - email : Sharnbasvauniversity@gmail.com
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Ref.: SUK/CHE (BoS)/2021-22/

Date: 27/11/2021

NOTIFICATION

Sub.: BoS meeting notice-reg.

Ref: Hon, Vice-Chanceller's approval of dated 24/11/2021.

A meeting of Chairman (BoS) and members of Board of Studies (Chemistry Board) is arranged on dated 27/11/2021 at 11:00 am in Conference Hall, university main building.

Agenda: 1) To discuss and finalize the draft syllabus and scheme of Engineering Chemistry (Theory and Lab).
2) To discuss and finalize the draft syllabus and scheme of PhD in Chemistry coursework.

Kindly attend the meeting as scheduled.

Thanking You,

Your's faithfully

BoS Chairman

CHAIRMAN
BASIC SCIENCE
Faculty of Engg. & Technology (Coeducation)
SHARNBASVA UNIVERSITY
KALABURAGI-585103

Encl: 1) List of BoS members.
2) Draft Scheme and Syllabus.

Copy to: 1) The Hon. Vice-Chancellor for the kind information.
2) The Registrar for information.
3) The Dean for information.
4) All concerned.