



**BOARD OF STUDIES MEETING – 2018-19**  
**K.S.R.M COLLEGE OF ENGINEERING**  
**AUTONOMOUS**

**Minutes of the Meeting**

Date	08-06-2018	Day	Friday
Time	10 AM – 5.00 PM	Venue	Main Block Computer Lab
Dept./SS	Humanities and Sciences (Chemistry)	Convener	Dr. I. Sreevani

Members Present: 07				Members Absent: 00		
S. No	Name	Designation	Signature	S.No	Name	Designation
1.	Dr.I. Sreevani	Associate Prof., HOD, Dept. of H&S, KSRMCE				
2.	Prof. P. Ravindra Reddy	Professor, Dept. of Chemistry, S.K.U, Ananthapuramu				
3.	Prof. C. Suresh Reddy	Professor, Dept. of Chemistry, S.V.U, Ananthapuramu				
4.	Dr. Y. B. Kiran	Associate Professor, Dept. of Chemistry, S.V.E.C, Tirupathi				
5.	Mrs. M. Mary Jasmine	Assistant Professor, Dept. of H&S, K.S.R.M.C. E				
6.	Dr. K. Venkata Ramana	Assistant Professor, Dept. of H&S, K.S.R.M.C. E				
7.	Sri. N. Prathap Kumar	Assistant Professor, Alumni Member				

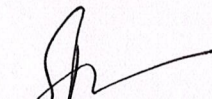



Dr. I. Sreevani, welcomed all the members to the meeting and presented the agenda of the meeting.

The resolutions are:

	To do item	Discussion	Resolution	Coordinator/in-charge
1	To finalize the curriculum and syllabus for I & II Semesters under R18UG Regulations.	The Board of Chairman has presented the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus.	The committee proposed few modifications in Engineering chemistry theory & Lab syllabus. Minor changes were done in Unit-I & Unit-V and BOS members finally approved the syllabus	Dr. I. Sreevani
2	To frame the curriculum and syllabus for PG Courses under R18PG Regulations	The Board of Chairman has presented the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus.	PG syllabus is approved by BOS members	Dr. I. Sreevani
3	To finalize and approve the syllabus for Certificate Course.	The Board of Chairman has presented the certification course syllabus designed by the faculty after taking the feedback from all stakeholders.	The committee appreciated the course and approved the content for offering Certificate Courses on Alternative fuels.	Dr. I. Sreevani

The Head of the Department have proposed the Vote of thanks and concluded the meeting.

  
Convener

  
HoD  
Head of Humanities & Sciences  
K.S.R.M. College of Engineering  
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## UG Programs in Civil Engineering (R18 UG)

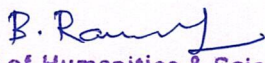
### Curriculum

#### 1<sup>st</sup> Semester

Subject Code	Subject Category	Subject Title	L	T	P	IM	EM	CR
1821101	BSC	Mathematics – 1	3	1	0	30	70	4
1823102	BSC	Engineering Chemistry	3	1	0	30	70	4
1824103	HSMC	English	2	0	0	30	70	2
1805104	ESC	Programming for Problem Solving	3	0	0	30	70	3
1823107	BSC	Chemistry Lab	0	0	3	50	50	1.5
1805108	ESC	Programming for Problem Solving Lab	0	0	4	50	50	2
1824109	HSMC	English Lab	0	0	2	50	50	1
<b>Total</b>			<b>11</b>	<b>2</b>	<b>9</b>	<b>270</b>	<b>430</b>	<b>17.5</b>

#### 2<sup>nd</sup> Semester

Subject Code	Subject Category	Subject Title	L	T	P	IM	EM	CR
1821201	BSC	Mathematics – 2	3	1	0	30	70	4
1822204	BSC	Engineering Physics	3	1	0	30	70	4
1802205	ESC	Basic Electrical Engineering	3	1	0	30	70	4
1803207	ESC	Engineering Graphics and Design	1	0	4	50	50	3
1822208	BSC	Engineering Physics Lab	0	0	3	50	50	1.5
1802209	ESC	Basic Electrical Engineering Lab	0	0	2	50	50	1
1803211	ESC	Workshop and Manufacturing Practice	1	0	4	50	50	3
<b>Total</b>			<b>11</b>	<b>3</b>	<b>13</b>	<b>290</b>	<b>410</b>	<b>20.5</b>

  
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**Detailed Course Structure**  
**Department of EEE**

**B. Tech - I Semester (Theory - 4, Lab - 3)**

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	1821101	Mathematics-I	BSC	3	1	0	30	70	4
2	1823102	Engineering Chemistry	BSC	3	1	0	30	70	4
3	1824103	English	HSMC	2	0	0	30	70	2
4	1805104	Programming for Problem Solving	ESC	3	0	0	30	70	3
5	1823107	Chemistry Lab	BSC	0	0	3	50	50	1.5
6	1805108	Programming for Problem Solving Lab	ESC	0	0	4	50	50	2
7	1824109	English Lab	HSMC	0	0	2	50	50	1
<b>Total</b>				11	02	09	270	430	17.5

**B. Tech - II Semester (Theory - 4, Lab - 3)**

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	1821201	Mathematics-II	BSC	3	1	0	30	70	4
2	1822203	Engineering Physics	BSC	3	1	0	30	70	4
3	1802206	Basic Electrical Engineering	ESC	3	1	0	30	70	4
4	1803207	Engineering Graphics & Design	ESC	1	0	4	50	50	3
5	1822208	Engineering Physics Lab	BSC	0	0	3	50	50	1.5
6	1802210	Basic Electrical Engineering Lab	ESC	0	0	2	50	50	1
7	1803211	Workshop on Manufacturing Practices	ESC	1	0	4	50	50	3
<b>Total</b>				11	03	13	290	410	20.5



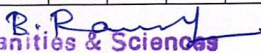
## UG Programs in Mechanical Engineering (R18 UG) Curriculum

### 1<sup>st</sup> Semester

Subject Code	Subject Category	Subject Title	L	T	P	IM	E M	CR
182110 1	BSC	Mathematics - I	3	1	0	30	70	4
182310 2	BSC	Engineering Chemistry	3	1	0	30	70	4
182410 3	HSMC	English	2	0	0	30	70	2
180510 4	ESC	Programming for Problem Solving	3	0	0	30	70	3
182310 7	BSC	Chemistry Lab	0	0	3	50	50	1.5
180510 8	ESC	Programming for Problem Solving Lab	0	0	4	50	50	2
182410 9	HSMC	English Lab	0	0	2	50	50	1
		Total	11	2	9	270	430	17.5

### Second Semester (mechanical)

Subject Code	Subject Category	Subject Title	L	T	P	IM	EM	CR
182120 1	BSC	Mathematics - II	3	1	0	30	70	4
182220 4	BSC	Engineering Physics	3	1	0	30	70	4
180220 5	ESC	Basic Electrical Engineering	3	1	0	30	70	4
180320 7	ESC	Engineering Graphics & Design	1	0	4	50	50	3
182220 8	BSC	Engineering Physics Lab	0	0	3	50	50	1.5
180220 9	ESC	Basic Electrical Engineering Lab	0	0	2	50	50	1
180321 1	ESC	Workshop and Manufacturing Practices	1	0	4	50	50	3
		Total	11	3	13	290	410	20.5

  
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**Detailed Course Structure**  
**Department of ECE**

**I Semester**

S. No.	Subject Code	Subject	Category	L	T	P	IM	EM	Credits
1	1821101	Mathematics – I	BSC	3	1	0	30	70	4
2	1822102	Engineering Physics	BSC	3	1	0	30	70	4
3	1823103	Basic Electrical Engineering	ESC	3	1	0	30	70	4
4	1824107	Engineering Graphics & Design	ESC	1	0	4	50	50	3
5	1822108	Engineering Physics Lab	BSC	0	0	3	50	50	1.5
6	1826106	Basic Electrical Engineering Lab	ESC	0	0	2	50	50	1
7	1827110	Workshop and Manufacturing Practices	ESC	1	0	4	50	50	3
		Total:		11	3		290	410	20.5

**II Semester**

S. No.	Subject Code	Subject	Category	L	T	P	IM	EM	Credits
1	1821201	Mathematics - II	BSC	3	1	0	30	70	4
2	1823202	Engineering Chemistry	BSC	3	1	0	30	70	4
3	1824203	English	HSMC	2	0	0	30	70	2
4	1805204	Programming for Problem Solving	ESC	3	0	0	50	50	3
5	1823207	Chemistry Lab	BSC	0	0	3	50	50	1.5
6	1805208	Programming for Problem Solving Lab	ESC	0	0	4	50	50	2
7	1824209	English Lab	HSMC	0	0	2	50	50	1
		Total:		11	02	09			17.5

  
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**Detailed Course Structure**  
**COMPUTER SCIENCE AND ENGINEERING**

**I Semester**

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1821101	BSC	Mathematics – I	3	1	0	30	70	4
1822104	BSC	Engineering Physics	3	1	0	30	70	4
1802103	ESC	Basic Electrical Engineering	3	1	0	30	70	4
1803107	ESC	Engineering Graphics & Design	1	0	4	50	50	3
1822108	BSC	Engineering Physics Lab	0	0	3	50	50	1.5
1802109	ESC	Basic Electrical Engineering Lab	0	0	2	50	50	1
1803110	ESC	Workshop and Manufacturing Practices	1	0	4	50	50	3
		<b>TOTAL</b>	<b>11</b>	<b>3</b>	<b>13</b>	<b>290</b>	<b>410</b>	<b>20.5</b>

**II Semester**

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1821201	BSC	Mathematics – II	3	1	0	30	70	4
1823202	BSC	Engineering Chemistry	3	1	0	30	70	4
1824203	HSMC	English	2	0	0	30	70	2
1805204	ESC	Programming for Problem Solving	3	0	0	30	70	3
1823207	BSC	Chemistry Lab	0	0	3	50	50	1.5
1805208	ESC	Programming for Problem Solving Lab	0	0	4	50	50	2
1824209	HSMC	English Lab	0	0	2	50	50	1
		<b>TOTAL</b>	<b>11</b>	<b>2</b>	<b>9</b>	<b>270</b>	<b>430</b>	<b>17.5</b>

  
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Course Title	Engineering Chemistry					B. Tech. CE, ME, EEE (I Sem) ECE & CSE (II Sem)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1823102/ 1823202	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	4	30	70	100
<b>Mid Exam Duration: 2Hrs</b>					<b>End Exam Duration: 3Hrs</b>			
<b>Course Objectives:</b>								
<ul style="list-style-type: none"> <li>• Knowledge in Chemistry serves as basic nutrient for the understanding and thereby design of materials of importance in life. Thus the advancement in Engineering depend on the outcome of basic sciences.</li> <li>• The Engineering Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial! Engineering applications.</li> <li>• The course main aim is to impart in-depth knowledge of the subject and highlight the role of chemistry principles (or) applications in the field of engineering.</li> <li>• After the completion of the course, the student would understand about the concepts of chemistry.</li> </ul>								
<b>Course Outcomes:</b> On successful completion of this course, the students will be able to								
CO 1	<b>Analyze</b> microscopic chemistry in terms of atomic and molecular orbitals and properties of complexes.							
CO 2	<b>Rationalize</b> periodic properties such as ionization potential, electro negativity and oxidation states.							
CO 3	<b>Illustrate</b> the concept of various intramolecular interactions, Properties of metals, water, thermodynamic considerations& application of Nernst equation							
CO 4	<b>Distinguish</b> the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.							
CO 5	<b>Remember</b> the major chemical reactions that are used in the synthesis and stereochemistry of molecules							


### Unit-1: Atomic and molecular structure

Schrodinger wave equation. Particle in a box (one dimensional) and their applications. Molecular orbital's of diatomic molecules and plots of the multicenter orbital's. Equations for atomic and molecular orbital's. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band structure of solids and the role of doping on band structures.

#### Learning Outcomes:

At the end of this unit, the student will be able to

- apply Schrodinger wave equation to particle in a box.
- illustrate the molecular orbital energy diagrams of diatomic molecules.
- get knowledge on properties of conductors, semiconductors and insulators and role of doping.
- discuss the magnetic behavior of transition metal complexes.

  
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## **Unit-2: Periodic properties**

Effective nuclear charge, penetration of orbital's, variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations, atomic and ionic sizes, ionization energies, electron affinity and electro negativity, polarizability, oxidation states, coordination numbers and geometries, hard, soft acids and bases.

### **Learning Outcomes:**

At the end of this unit, the student will be able to

- describe the arrangement of the elements in the periodic table.
- explains the discovery of electron ,proton and neutron and their characteristics.
- explains the rules of electron filling in atoms and writes the electronic configuration.
- Explains the energies of s ,p, d, f orbitals & identifies the periodic properties and can explain how they vary in group and period.
- illustrate the geometries of complex structures and explains the acid- base nature

## **Unit-3:**

### **Intermolecular forces**

Ionic, dipolar and van Der Waals interactions. Equations of state of real gases and critical phenomena.

### **Use of free energy in chemical equilibria**

Thermodynamic functions: Introduction, define energy, entropy , Free energy. Free energy and emf. Cell potentials, Nernst equation and applications .Water chemistry-types of water and Boiler troubles. Corrosion-types of corrosion and factors influencing corrosion.

### **Learning Outcomes:**

At the end of this unit, the student will be able to

- explains the formation of ionic bond and dipolar interactions.
- explains the behavior of real gases and describe the conditions required for liquification and gases and critical phenomenon.
- illustrate the definitions of energy and entropy and apply Nernst equation for calculating cell potentials.
- list the differences between temporary and permanent hardness and illustrate problems associated with use of hard water in boilers
- demonstrate corrosion types and factors influencing corrosion.

## **Unit-4: Spectroscopic techniques and applications**

Principles of spectroscopy and selection rules. Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy of diatomic molecules.

### **Learning Outcomes:**

At the end of this unit, the student will be able to

- explains principles of spectroscopy and explains different types of spectral series in electromagnetic spectrum.



- Illustrate the principle of fluorescence and its application in medicine
- derive equation for rotational and vibrational spectra and its application for diatomic molecules.

#### Unit-5: Stereochemistry

Representations of 3 dimensional structures, structural isomers and stereo isomers, configurations and symmetry and chirality, enantiomers, diastereomers, optical activity, absolute configurations and conformational analysis of Cyclohexane.

#### Simple Organic Reactions

Introduction to reactions involving Substitution ( $SN^1$  &  $SN^2$ ), Addition Reactions involving  $C=C$  (Markonikoff reaction) &  $C=O$  (Grignard reagent), Elimination ( $E_1$  &  $E_2$ ), Oxidation (Baeyer villiger reaction), Reduction (Clemmensen reduction).

Learning Outcomes: At the end of this unit, the student will be able to

- represent the organic molecule in 3-dimensional structure.
- explains different types of isomers with examples.
- illustrate the mechanisms of substitution, addition and elimination reaction.
- explains oxidation and reduction reactions

#### Text Books:

1. A textbook of Engineering chemistry by Shashi Chawla, Dhanpat Rai & Co publications
2. Atkins' Physical Chemistry, Peter Atkins, Julio de Paula and James Keeler, Oxford University Press, 2010.
3. An Introduction to Electrochemistry, Glasstone, Arihant Publications.
4. Organic chemistry by Clayden and Warren, Oxford publications

#### Reference Books:

1. Textbook of Engineering Chemistry, Jain and Jain, Dhanpat Rai & Co publications, 2013
2. New Concise Inorganic Chemistry, 5<sup>th</sup> Edition, J. D. Lee, Oxford University Press, 2008.
3. Principles of Instrumental Analysis, 6<sup>th</sup> edition, Douglas A. Skoog, Cengage Publications.
4. Advanced Inorganic Chemistry, Cotton F Albert, Wilkinson Geoffrey, Prism Publications

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PCourse Title	Chemistry Lab					B. Tech. CE, ME, EEE (I Sem) ECE & CSE (II Sem)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1823107/ 1823207	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	3	1.5	50	50	100
					<b>End Exam Duration: 3Hrs</b>			
<b>Course Objectives:</b>								
<ul style="list-style-type: none"> <li>To verify the fundamental concepts with experiments.</li> <li>The student will have exposure to various experimental skills and hand-on experience which is very essential for an Engineering student.</li> </ul>								
<b>Course Outcomes:</b> On successful completion of this course, the students will be able to								
CO 1	<b>Find</b> the cell constant and Conductance of solutions							
CO 2	<b>Evaluate</b> molecular/system properties such as surface tension, viscosity, redox potentials, Colligative properties etc.							
CO 3	<b>Analyze</b> the acid value in oil							
CO 4	<b>Determine</b> the quantity of water sample by estimation of hardness of water, chloride content, DO, etc.,							
CO 5	<b>Demonstrate</b> the process of Adsorption, Partition co-efficient & Chemical oscillations							

#### Choice of 8 experiments in the following

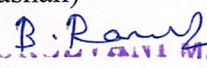
1. Estimation of Hardness of Water present in given water sample by EDTA method.
2. Determination of surface tension and viscosity.
3. Determination of chloride content of water.
4. Colligative properties using freezing point depression.
5. Estimation of Dissolved Oxygen present in given water sample by Winkler's method.
6. Potentiometry - determination of Redox potentials and emfs.
7. Synthesis of a polymer/drug.
8. Saponification/acid value of an oil.
9. Determination of cell constant and conductance of solutions.
10. Chemical oscillations- Iodine clock reaction.
11. Determination of the partition coefficient of a substance between two immiscible liquids.
12. Adsorption of acetic acid by charcoal.

#### Textbooks:

1. Vogel's Text book of Quantitative Chemical Analysis, J. Mendham et.al., Pearson Education, Sixth Edition, 2012.
2. Laboratory manual on Engineering Chemistry, Anupama Rajput, Dhanpat Rai & Co Publications.
3. Essentials of Experimental Engineering Chemistry, Shashi Chawla, Dhanpat Rai & Co Publications.

#### Reference Books:

1. Practical Engineering Chemistry by K. Mukkanti, etal, B.S. Publications, Hyderabad.
2. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.
3. Essentials of Physical Chemistry, Bhal & Tuli. (S. Chand Publications).
4. Advanced Inorganic Analysis, Agarwal & Keemtilal (Pragati prakashan)

  
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