

## CLPC11– Chemistry III

### COURSE PLAN

Course Title	Chemistry III		
Course Code	CLPC11	No. of Credits	3
Department	Chemistry	Faculty	Dr. M. Sathya
Pre-requisites Course Code	NA		
Course Coordinator(s) (if, applicable)	Dr. M. Sathya		
E-mail	shakthikrish@gmail.com	Phone:	+919940060659
Course Type	PC		

### COURSE OVERVIEW

This course is for II year B. Tech. Chemical Engineering students. This 3 Credit course is based on theory classes.

### COURSE OBJECTIVE

- To learn the principles of photochemical reactions and catalyzed reactions in order to apply them in organic synthesis.
- To acquire knowledge on the advanced characterization techniques in identification of compounds.
- To understand the principles of reaction kinetics, phase equilibrium and solution chemistry.
- To gain insight into fundamentals and applications of electrochemical systems.

### COURSE OUTCOMES(CO)

At the end of the course, student will be able to

- Apply the concepts of photochemistry and catalysts in optimizing the conditions of organic synthesis.
- Use advanced spectroscopic tools in characterization of the reaction products to assess purity and yield.
- Determine the best reaction conditions to maximize the products by applying the principles of homogeneous and heterogeneous catalysis.
- Adopt phase equilibrium principles to achieve fractional distillation, steam distillation and solvent extraction.
- Become familiar with the properties of electrolytes and electrodes and their use in electroanalytical techniques and electrochemical power sources.

### COURSE TEACHING AND LEARNING ACTIVITIES

Sl. No.	week	Topic	Mode of Delivery
1	I-week Aug/2017	Fundamentals of Photochemistry and various photochemical reactions.	C&T, PPT
2	II-week Aug/2017	Catalytic reactions in organic synthesis	C&T, PPT
3	III-week Aug/2017	Electrochemistry – DHO theory, Ostwald's dilution law – Applications.	C&T, PPT
4	IV-week Aug/2017	Buffer solutions, Hydrolysis of salts and electro-analytical techniques.	C&T, PPT

5	I-week Sep/2017	Electrochemical Power sources	C&T, PPT
6	II-week Sep/2017	Chemical Kinetics – Rate and order simple reactions. Reaction rate theories.	C&T, PPT
7	III-week Sep/2017	Complex reactions	C&T, PPT
8	IV-week Sep/2017	Homogenous and heterogeneous Catalysis and Surface reactions	C&T, PPT
9	I-week Oct/2017	Enzyme Catalysis, Self-assembled monolayers, LB films.	C&T, PPT
10	II-week Oct/2017	Adsorption isotherms	C&T, PPT
11	III-week Oct/2017	Phase Equilibria Phase rule applications.	C&T, PPT
12	IV-week Oct/2017	Ideal and non-ideal solutions.	C&T, PPT
13	I-week Nov/2017	Identification of organic compounds using spectroscopic methods – basics	C&T, PPT
14	II-week Nov/2017	Principles and applications.	C&T, PPT
15	III-week Nov/2017	Case studies and problems.	C&T, PPT
16	<b>Assignment 1</b>	<b>Unit-I</b>	
17	<b>CT1</b>	<b>Unit-I + Unit-II (Up to buffer solutions)</b>	
18	<b>Assignment 2</b>	<b>Unit-II + Unit-III</b>	
19	<b>CT2</b>	<b>Unit-III + Unit-IV</b>	

#### COURSE ASSESSMENT METHODS

Sl. No.	Mode of Assessment	Week/Date	Duration	% of Weightage
1	<b>Assignment/Quiz/Seminar</b>	Fourth week of August	NA	5
2	<b>Cycle Test - 1</b>	Fourth week of September	60 minutes	20
3	<b>Assignment/Quiz/Seminar</b>	Third week of October	NA	5
4	<b>Cycle Test - 2</b>	Second week of November	60 minutes	20
5	<b>End Semester</b>	First week of December	180 minutes	50
<b>TOTAL</b>				<b>100</b>

#### ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals etc.

- Morrison and Boyd, *A text book of Organic chemistry*, 7<sup>th</sup> Edn, Pearson Education, Singapore Pte Ltd, 2010.
- K. Jagadamba Singh, Jaya Singh, *Photochemistry and Pericyclic reactions*, 3<sup>rd</sup> Edition, New Age International Publications, 2009.
- Atkins, P and Julio De Paula, *Physical Chemistry*, 9<sup>th</sup> Edn, W. H. Freeman, 2009.
- B. R. Puri and R. Sharma, *Principles of Physical Chemistry*, S. Chand & Co.
- K. J. Laidler, *Chemical Kinetics*, 3<sup>rd</sup> Edn, PHI Publishers, 1987
- R. M. Silverstein and F. X. Webster. *Spectrometric identification of organic compounds*, 7<sup>th</sup> Edn, 2017.

#### COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attachment also)

- Feedback from students during committee meetings.
- Anonymous feedback through questionnaire (as followed previously)

#### COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

- CycleTest I and II will be conducted in regular classes.
- The compensation test for those who missed CT-I and II with genuine reason will be

conducted in III week of November covering the entire syllabus.

3. Plagiarism is strictly not allowed in assignments.

4. 75% of attendance is compulsory for writing the end semester exam. Compensation classes will be held for making shortage of attendance in 3<sup>rd</sup> and 4<sup>th</sup> week of November to be eligible to attend the end semester exam.

#### ADDITIONAL COURSE INFORMATION

The respective faculty will be available for consultation at times as per the intimation by the faculty.

Coordinator

M. Sathya

CC-Chairperson

S. Saradaman

HOD

[Signature]  
17/8/2018

Dr. M. Sathya

Temporary Faculty

Department of Chemistry