

CH – 618 Natural Products Chemistry

COURSE PLAN			
Course Title	M.Sc. CHEMISTRY		
Course Code	CH 618	No. of Credits	3 (Theory)
Department	Chemistry	Faculty	Dr. K. VASANTHAM
Pre-requisites (Course Code)	NIL		
Course Coordinator(s) (if, applicable)	Dr. K. VASANTHAM		
E-mail	kvasantham@nitt.edu	Telephone No.	8870765272
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
COURSE OVERVIEW			
This course is offered to I year M.Sc students in the II semester. This is a three credit course consisting of five units. Three theory classes will be conducted in a week.			
COURSE OBJECTIVE			
To be a pioneer in the field of natural products chemistry and to bring into the light their vital role in drug discovery. The M.Sc syllabus covers the introduction – history, structure and classification, followed by synthesis, reactions, and biosynthesis of natural products.			
COURSE OUTCOMES (CO)			
Students would become familiar with the			
<ul style="list-style-type: none"> ✓ Chemical structure, classification, isolation and structural elucidation of selected alkaloids and terpenes. ✓ Natural and non-natural amino acids, their synthesis, reactions and properties with a basic understanding of the structure of peptides and proteins. ✓ Classification of steroids, synthesis of cholesterol and its conversion into other steroidal hormones. ✓ Carbohydrates – Structure, synthesis and determination of configuration. ✓ Heterocyclic compounds – five & six membered rings, fused and biologically important heterocycles. 			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week	Topic	Mode of Delivery
1	I week of January, 2017	Unit I: Introduction to natural products, Chemical structure and classification, structural elucidation based on degradative reactions.	C&T, PPT
2	II week of January, 2017	Isolation and structural elucidation of selected alkaloids and terpenes – quinine, morphine.	C&T, PPT
3	III week of January, 2017	Isolation and structural elucidation of Reserpine.	C&T, PPT
4	IV week of January, 2017	Isolation and structural elucidation of citral, juvabione and longiofolene – Insect pheromones.	C&T, PPT
5	I week of February, 2017	Unit II: Synthesis of amino acids – reactions – properties.	C&T, PPT
6	II week of February, 2017	Amino Acids in Nature: Amino Acids and their Metabolites in Nature – Structure of proteins – Peptides	C&T, PPT
7	III week of February, 2017	Nucleic Acids – structure of nucleosides and nucleotides–RNA and DNA, Watsons and Crick model–DNA–drug interaction.	C&T, PPT
8	IV week of February, 2017	Unit III: Steroids – classification – Synthesis and structural elucidation of cholesterol.	C&T, PPT
9	I week of March, 2017	Conversion of cholesterol to progesterone – androsterone and testosterone – cortisone – Vitamin D.	C&T, PPT

10	II week of March, 2017	Unit IV: Determination of configuration – Hudson's rules. Structure of sugars– transformation of sugars.	C&T, PPT
11	III week of March, 2017	Preparation of alditols, glycosides and deoxysugars.	C&T, PPT
12	IV week of March, 2017	Preparation of Synthesis of vitamin C from glucose.	C&T, PPT
13	I week of April, 2017	Unit-V: Introduction to heterocyclic compounds. Five membered heterocyclic ring systems with one or two hetero atoms –Furan, pyrrole, thiophene and thiazole.	C&T, PPT
14	II week of April, 2017	Six membered heterocyclic ring system – Pyridine. Fused heterocyclic ring systems – Indole, quinoline.	C&T, PPT
15	III week of April, 2017	Biologically important heterocyclic compounds: Pyrimidines and purines. Practice problems.	C&T, PPT

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
Theory				
1	Assignment	III week of January	1 week	10
2	Test I	I week of February	45 minutes	15
3	Seminar	I week of March	15 minutes for each student	10
4	Test II	IV week of March	45 minutes	15
5	End semester	IV week of April	3 hours	50

Theory = Total (100)

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

1. I. L. Finar, Organic Chemistry Vol. I & Vol. II– Pearson Education, 6th edn.
2. F. A. Carey and R. J. Sundberg, (Eds) 3rd Edition, Part B. Plenum/Rosetta, 1990.
3. I. Fleming, Selected Organic Synthesis, John Wiley and sons, 1982.
4. Atta-ur-Rahman, Studies in Natural Products Chemistry, Vol.1 and 2, Elsevier, 1988.

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

1. Feedback from students during class committee meetings.
2. Anonymous feedback through questionnaire at the end of the semester.

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

1. Test I and II will be conducted during assessment period I and III respectively.
2. The question paper for the end semester examination will be 50 marks.
3. 75% attendance is compulsory for writing the end semester exam.
4. Plagiarism should be avoided at all costs.

ADDITIONAL COURSE INFORMATION

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

K. Vasantham
Coordinator 04/10/17

CC-Chairperson *Alindrella* HOD *Alindrella*
4/11/17

(Dr. K. VASANTHAM)