MANGALORE UNIVERSITY

DEPARTMENT OF CHEMISTRY

M. SC. ORGANIC CHEMISTRY

OC H 553: Natural Products Chemistry

COURSE OUTCOME:

- Students will get a good understanding of isolation, classification natural products,
- To learn methods of structure elucidation and synthesis of various types of alkaloids, terpenoids, carotenoids,
- Steroids and steroidal hormones with representative examples, transformations in steroids and hormones and
- To study steroidal oral contraceptives.

UNIT-I: **[15 Hours]**

Alkaloids: Definition, Classification and isolation of alkaloids, general methods of structural determination of alkaloids, detailed study of structure elucidation, stereochemistry, rearrangement, Synthesis and biogenesis of Papaverine, Adrenaline, Ephedrine, Piperine, Cinchonine, Quinine, Morphine, Yohimbine, Reserpine and Lysergic acid.

UNIT- II: **[15 Hours]**

Terpenoids: Introduction, classification, isoprene rules, methods of structure determination. Structural elucidation & synthesis of Geraniol, Menthol, α-Pinene, Camphor, Farnesol, Zingiberene and α-Santonin, Vetivones, Caryophylene. **Diterpenoids:** Abietic and Gibberillic acid.
Triterpenoids: Squalene and Phytol.
Carotenoides: Introduction and geometrical isomerization of Carotenes. Structure and Synthesis of β-Carotene and Lycopene.

UNIT- III: **[15 Hours]**

Steroids: Introduction and Nomenclature of steroids, Blanc's rule, Barbier-Wieland degradation, Oppenauer oxidation, Diel's hydrocarbon, Chemistry of Cholestrol, Ergosterol, Vitamin-D, Stigmasterol & bile acids.
Steroidal hormones: Chemistry of Oestrone, esterdiol, estriol and their chemical relationship. Progesterone, androsterone and testosterone - Structure and Synthesis of Cortisone, Cortisol and Aldosterone. Transformations in steroids and hormones. Steroidal oral contraceptives.

References:

1. Natural Products Chemistry Vol-I & II. G. R. Chatwal (Himalaya) 1990.
2. Chemistry of Natural Products – Vol-I & II – O. P. Agarwal (Goel) 1985.
3. Organic Chemistry, Vol-I & II- I. L. Finar (Longmann ELBS London), 2000.
4. Chemistry of Natural Products: A Unified Approach-N R Krishnaswamy (University Press) 1999.

5. Chemistry of Natural Products-Sujata V. Bhat, B.A. Nagasampagi, Meenakshi Sivakumar (Springer-Narosa) 2005.