INTRODUCTION

Organic chemistry is everywhere in today's world. Mastering organic chemistry is crucial for the design of a wide range of everyday products, novel products and processes. Design of materials with tailor-made properties requires an enhanced understanding of their synthesis, physico-chemical characteristics, and characterization and structure-property relationships at the molecular level.

An historic change was made on October 24, 2009 when two courses of the program were offered on-line, enabling the busy postgraduate students to access the lessons from home. The department envisages offering this program via dual mode and more courses will be offered on-line in the future.

The **M.Sc. in Applied Organic Chemistry** Program provides a broad background in organic chemistry both at theoretical and experimental level. This is accomplished via courses/practical classes covering different areas related to organic chemistry and by conducting a case study on an identified industrial problem. The industrial problem will be conducted with extensive collaboration with companies. The option is available for the students who wish to continue for SLQF 8

. COURSE AIMS

- To provide students with an advanced knowledge of areas of organic chemistry relevant to Sri Lankan industry, including industries based on natural products, pharmaceuticals, food & beverages etc. in order to improve productivity and enhance development in industry.
- To expose graduates to soft skills necessary for an industrial environment.

COURE STUCTURE

Course structure is designed according to the guidelines issued by the Quality Assurance and Accreditation Council of the UGC, Sri Lanka to fulfill criteria of the M.Sc. program SLQF 8 & SLQF 9. M.Sc. in Applied Organic Chemistry offered by the Department of Chemistry consists of three parts.

Part I: Post graduate Diploma (offer 25 credits)
Part II: Master Degree (offer 30 credits)
Part III: Master Degree (offer 60 credits with research)
SLQF 8 – Part I
SLQF 9 – Part I & Part II
SLQF 10 – Part I, Part II & Part III

COURSE CONTENT (SLQF 8 & 9)

Part I

Theory Modules

MOC 5001: Advanced Organic Chemistry (3C)

Mechanistic & stereochemical approach to organic reactions
Organic synthesis
Heterocyclic chemistry
Concerted reactions
Industrial organic synthesis
Synthesis and fabrication of organic nanomaterials

MOC 5002: Separation and Characterization Techniques (2C)

Separation methods
Molecular spectroscopy – absorption
Molecular spectroscopy – emission
Atomic spectroscopy - absorption and emission

MOC 5003: Medicinal Chemistry (3C)

Drug design and development
Therapy of infectious diseases
Drugs acting on the central nervous system
Drugs affecting renal, blood and cardiovascular function
Drugs used in controlling allergies and inflammation
Hormones and hormone antagonists
Drugs used in the chemotherapy of neoplastic diseases
Drugs acting on the gastrointestinal system and drugs acting on bone

MOC 5004: Natural product Chemistry (3C)

Introduction to secondary metabolism
The acetate pathway
The shikimate pathway
The mevalonate and deoxyxylulose phosphate Pathways
Alkaloids
Carbohydrates

MOC 5005: Proteins in Industry (3C)

Protein function
Tools in recombinant DNA technology
Applications in recombinant DNA technology
Fermentation process
Microbial products

MOC 5008: Industrial Organic Chemistry I (2C)

Plastics in industry
Rubber and rubber products
Persistent Organic Pollutants
Paints and surface coating techniques

MOC 5009: Industrial Organic Chemistry II (2C)

The chemistry of cosmetics
Textiles and Dyes
Brewing technology and chemistry of fermentation processes
Quality management

Practical Modules

MOC5007: Laboratory Techniques Course (7C)

Simple and multi-step synthesis of organic compounds
Isolation of natural products
Biochemical applications
Analytical chemistry applications
Recombinant technology and fermentation processes
Molecular modeling and drug design
Statistical analysis
Quality management

Part II

MOC 5010: Independent Study (5C)

Part III (SLQF 10)

MOC 5011: Scientific writing, Citation management & presentation (5C)

MOC 5012: Laboratory Management (5C)

MOC 5013: Research project (20C)