Module Structure: (15 credits each)

- Lectures and Tutorial
- Assessment: 50% coursework, 50% unseen examination.

Module 1: Bioinformatics and structural biology as applied to drug design
- Introduction to Bioinformatics
- Bioinformatics of drug targets
- Cloning and expression of proteins for structural studies
- Structural Biology and tools

Module 2: The biology of drug discovery programmes
- Pharmacology of the main drug targets
- Biological data for drug discovery
- Statistics for drug discovery
- Identification of drug targets

Module 3: Cheminformatics and modelling for drug design
- Cheminformatics in drug discovery and techniques
- Drug likeness
- Molecular modeling
- QSAR

Module 4: New therapies using biological molecules
- Protein modeling
- Antibodies as therapies and the design of antibodies
- SiRNA and Stem cells
- High content screening

Module 5: Biological screening methods, X-ray, protein NMR and phenotypic screening
- Biophysical screening methods for fragments/ X-ray data on fragments
- Protein NMR
- Phenotypic screening
- High-throughput screening

Module 6: Fragment based drug design
- Fragment based drug discovery
- Computational design of fragments
- Virtual screening
Module 7: Target selection – scientific ground
- Druggability – druggable genome
- Cancer targets
- New Pain drugs
- Target validation and identification of big Pharma
- Epigenetics, the impact of medicine

Module 8: Commercial and intellectual property
- Intellectual Property
- Economics, cost of drug development