UNIVERSITI TEKNOLOGI MARA

CBE609: PARTICLE PROCESSING FOR PHARMACEUTICAL APPLICATION

Course Name (English)	PARTICLE PROCESSING FOR PHARMACEUTICAL APPLICATION APPROVED
Course Code	CBE609
MQF Credit	3
Course Description	This module covers the design and manufacture of liquid and semi-solid dosage forms. The aim is to impart a detailed knowledge of the design, processing and manufacture of liquid and semi-solid pharmaceutical dosage forms and the associated technology.
Transferable Skills	Critical Thinking
Teaching Methodologies	Lectures, Lab Work, Tutorial, Presentation
CLO	CLO1 Describe the properties and characteristics of various liquid pharmaceutical products. CLO2 Distinguish different chemical and physical properties in formulating various solid, semi-solid and liquid pharmaceutical products CLO3 Propose suitable properties of pharmaceutical products for a specific application
Pre-Requisite Courses	No course recommendations

Topics
1. Surfactant Characteristic 1.1) 1.1 Water structure, hydrophobic bonds and micelle formation, micelle structure, factors influencing the critical micelle concentrations and micelle size. 1.2) 1.2 Surfactant characteristics and its uses in formulation.
2. Liposome,niosome and surfactant vesicles 2.1) n/a
3. Polymerisation system 3.1) 3.1 Types of polymers, general solubility characteristics, ?polydispersity, viscosity, gel characteristics, heterogel which includes copolymer, syneresis, polymer and water reactions and polymer crystallisation. 3.2) 3.2 Specific polymers which are used in pharmacy which includes cellulose derivatives, Polyvynyl Povidone (PVP), dextran and glycol polyoxythylene. 3.3) 3.3 Polymerisation methods in industry 3.4) Experiment: Polymerization and characterization analysis
4. Suspension 4.1) 4.1 Pharmaceutical suspensions characteristics, particle precipitation, stability of suspension, zeta potential and relationship with stability, flocculation control using polymer and surfactant. 4.2) 4.2 Crystal growth in suspension, rheology characteristics 4.3) 4.3 Determination method for suspension. 4.4) Experiment: Particle formation and characterization
5. Emulsion 5.1) 5.1 Definition, determination of types of emulsion, thermodynamic formulation and dissociation of emulsion. 5.2) 5.2 Stability mechanism for emulsion, HLB system and its importance in emulsification, phase reversion. 5.3) 5.3 Macromolecule emulsifiers and stability of emulsion by powders, assessing stability of emulsion. 5.4) 5.4 Preparation of bulk emulsion, emulsion with multi-microemulsion and fat emulsion for IV. 5.5) Experiment: Emulsion
6. Nanoparticles 6.1) 6.1 Definition 6.2) 6.2 Preparation process and stability determination 6.3) Experiment: Nanoparticle processing

Assessment Breakdown	%
Continuous Assessment	40.00%
Final Assessment	60.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	n/a	10%	CLO1 , CLO2
Lab Exercise	n/a	10%	
Test	n/a	20%	CLO1 , CLO2 , CLO3

Reading List

Recommended Text

- **Ram I. Mahato, Ajit S. Narang, 2012, *Pharmaceutical Dosage Forms and Drug Delivery*, 2 Ed., Taylor & Francis Group, NW.**

Reference Book Resources

- **M.E Aulton.Pharmaceutics 2002, *The science of dosage form design*, 2 Ed., , Churchill Livingstone,London [ISBN:]**
- **A.T.Florence,david Attwood 2004, *Physiochemical Principles of Pharmacy,*, 3 Ed., , Pharmaceutical Press,London [ISBN:]**
- **E.A. Rawlins.Bentley's 2002, *Textbook of pharmaceutics*, 8 Ed., , Bailliere,London**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources