

FORMULATION DEVELOPMENT SUMMER TRAINING (#One Month)

B.V. Patel Pharmaceutical Education and Research Development (PERD) Centre, Thaltej, Ahmedabad

| | Module 1 | Module 2 | Module 3 | Module 4 |
|--------------------------------|--|--|--|---|
| Topics | Understanding Quality by Design (QbD) | Molecular Pharmaceutics (Nanotechnology and Targeted DDS) | Dissolution for Solid Oral Dosages | Pharmaceutical Preformulation |
| Content | <ul style="list-style-type: none"> • The importance of QbD • DoE vs. one-factor-at-a-time • The sequential approach of DoE: screening, modelling and optimization – which design in which context- <ul style="list-style-type: none"> ➤ Experimental designs ➤ Screening designs ➤ Factorial designs ➤ Composite designs ➤ Mixture designs • Factor screening and modelling: how to identify the Critical Process Parameters (CPP's) and Material Attributes (CMA's) as well as their interactions • Optimization of a response variable with response surface models • Graphical visualization and interpretation of the results • DoE for formulations • Defining the Design Space • Applications of systematic optimization techniques <p>HANDS ON SESSION (Optional) on Design-expert software (Additional 1 week)</p> | <ul style="list-style-type: none"> • Targeting strategies in drug delivery <ul style="list-style-type: none"> ➤ Passive targeting ➤ Active targeting • Challenges in the use of nanoformulations for drug delivery- Barriers, Opportunities, Nanoformulations in current clinical practice • Nanoparticulates and their applications Short Introduction and Basic principles on Nanotechnology • Nanoparticulate systems in therapeutics <ul style="list-style-type: none"> ➤ Lipidic drug carriers, Liposomes ➤ Polymeric nanosystems ➤ Mixed nanosystems ➤ Thermo-responsive release ➤ Enzyme responsive release ➤ pH responsive release • Nanosystems characteristics <ul style="list-style-type: none"> ➤ Biophysical principles of nanosystems ➤ Stability of nano-systems <p>PRACTICAL (OPTIONAL) Selection of appropriate excipients and preparation and characterization</p> <ul style="list-style-type: none"> • Biphasic nanosystems • Lipidic nanoparticles • Vesicular systems (Liposomes etc) | <ul style="list-style-type: none"> • The BCS classification • Dissolution method development for solid orals • Dissolution instruments qualification- performance verification vs. physical calibration • Fundamentals and applications of USP-3 reciprocating cylinder • Fundamentals of USP-4, flow through cell • Fundamentals and applications of USP-5 paddle over disc • Fundamentals and application of Franz diffusion cell (permeation analysis for transdermals) • Introduction to IVIVC and dissolution testing <p>Practical Demonstration of USP Dissolution Type I USP Dissolution Type II USP Dissolution Type III USP Dissolution type V</p> | <ul style="list-style-type: none"> • Introduction to Pharmaceutical Preformulation • Importance, role and determination of - <ul style="list-style-type: none"> ➤ Aqueous solubility ➤ Permeability ➤ Stability Studies ➤ pKa ➤ Log P ➤ Solid State Properties at molecular level- crystallinity, polymorphism, solvated state, amorphous form and co-crystals etc ➤ Compaction Studies ➤ Compatibility Studies (especially using DSC and IR- with practicals) <p>Practical Demonstration of – Compatibility Studies using- 1. Controlled temperature and humidity 2. DSC 3. IR</p> |
| Time | 8 weeks+ 1 week | 4 weeks + 1 week | 2 weeks | 2 weeks |
| Individual | Rs. 5,000 (Only theory) + 5,000 (hands on) | Rs. 5,000 (Only theory) + Rs 1500 (practical) | Rs. 5000/- | Rs 4000/- |
| Group of 5 max. upto 10 | Rs. 4000 + 4000 per individual | Rs. 5500/- per individual | Rs. 4500/- per individual | Rs. 3500/- per Individual |

For details please contact: director@perdcentre.com, perd@perdcentre.com, amita@perdcentre.com, viral@perdcentre.com, jacob@perdcentre.com

Phone: 079-27439375, 27416409.

Four hours a day, 5 days in a week