Oral Drug Delivery Technologies and Challenges Training Course

Professional Development Training Course Outline

Category	Biotechnology and Pharmaceutical Development	**Duration**	10 Days
Base Fee	$4,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Oral drug delivery remains one of the most common and effective methods of drug administration in modern medicine. The growing demand for efficient and patient-friendly drug delivery systems, along with the rise of innovative pharmaceutical formulations, has led to the development of advanced oral drug delivery technologies. Oral Drug Delivery Technologies and Challenges Training Course offers a deep dive into the complex processes of drug formulation, absorption, bioavailability, and the various challenges encountered in the development of oral drug delivery systems. Participants will gain an in-depth understanding of pharmaceutical technology, controlled-release systems, biopharmaceutics, and drug delivery innovations, ensuring they stay ahead in this dynamic and ever-evolving industry.

With a focus on both the theoretical and practical aspects, the course covers the scientific principles behind oral drug delivery, as well as the technical, regulatory, and manufacturing challenges. Learners will explore formulation strategies, advanced excipients, and the role of nanoformulations and smart drug delivery systems in enhancing oral bioavailability and therapeutic efficacy. Whether you're a researcher, developer, or regulatory expert, this course equips you with the essential tools and knowledge to navigate the complexities of oral drug delivery technologies while addressing the industry's most pressing challenges.

Programme Curriculum

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Course Objectives

1. Understand oral drug delivery systems and their importance in modern pharmacology.
2. Learn the biopharmaceutical principles impacting drug absorption and bioavailability.
3. Explore the advantages of controlled-release formulations in oral drug delivery.
4. Investigate drug formulation technologies to enhance therapeutic efficacy.
5. Analyze regulatory guidelines governing oral drug delivery systems.
6. Learn about the latest nanotechnology applications in drug delivery.
7. Gain insights into the challenges of oral drug delivery, such as stability and solubility issues.
8. Understand the impact of excipients and their role in drug formulation.
9. Identify barriers to oral drug absorption and methods to overcome them.
10. Evaluate the potential of smart delivery systems in oral drug formulations.
11. Understand the clinical and market challenges of launching oral drug products.
12. Study patient compliance issues and how oral drug delivery can be optimized for better adherence.
13. Explore future trends in oral drug delivery, including personalized medicine and biotechnology advancements.

Target Audience

1. Pharmaceutical Scientists
2. Drug Formulation Developers
3. Regulatory Affairs Specialists
4. Medical Researchers
5. Biotechnology Professionals
6. Healthcare Providers and Clinicians
7. Pharmaceutical Industry Executives
8. Graduate and Postgraduate Students in Pharmaceutical Sciences

Course Modules

Module 1: Introduction to Oral Drug Delivery

- Overview of oral drug delivery systems

- Types of oral dosage forms
- Advantages and limitations of oral administration
- Importance of bioavailability
- Case Study: Role of pharmacokinetics in oral drug delivery

Module 2: Biopharmaceutics and Drug Absorption

- Principles of drug absorption
- Factors affecting bioavailability
- Intestinal permeability and solubility
- Gastrointestinal pH and drug dissolution
- Case Study: Bioavailability issues in different oral formulations

Module 3: Controlled-Release and Extended-Release Systems

- Definition and benefits of controlled release
- Technologies behind extended-release formulations
- Impact on patient adherence and therapeutic efficacy
- Challenges in formulation development
- Case Study: Extended-release morphine formulation

Module 4: Role of Excipients in Oral Formulation

- Importance of excipients in drug formulation
- Types of excipients used in oral drug delivery
- Impact of excipients on drug stability
- Novel excipient technologies
- Case Study: The use of excipients in tablet formulations

Module 5: Nanotechnology in Drug Delivery

- Introduction to nanomedicine and drug delivery
- Mechanisms of drug transport via nanocarriers
- Bioavailability enhancement through nanotechnology
- Regulatory challenges with nanomedicines
- Case Study: Nanoparticle-based oral drug delivery systems

Module 6: Challenges in Oral Drug Delivery

- Solubility and stability issues in oral formulations
- Gastric pH and drug degradation
- Patient compliance and administration barriers
- Strategies to overcome drug delivery challenges
- Case Study: Overcoming solubility issues in poorly water-soluble drugs

Module 7: Regulatory Considerations for Oral Drug Products

- Overview of global drug regulatory frameworks
- Guidelines for developing oral drug products
- Clinical trial design for oral formulations
- Post-market surveillance and compliance
- Case Study: Regulatory hurdles in oral drug approval

Module 8: Patient-Centric Drug Delivery Solutions

- Enhancing patient adherence through better formulations
- Role of drug delivery in chronic disease management
- Personalized oral drug delivery
- Overcoming difficulties in pediatric and geriatric dosing
- Case Study: Patient-centric drug delivery systems in diabetes

Module 9: The Future of Oral Drug Delivery

- Trends in oral delivery technologies
- Advanced formulations: smart pills and digital drug delivery
- Biologics in oral drug delivery
- Impact of 3D printing in drug formulation
- Case Study: Future trends in oral delivery of biologics

Module 10: Pharmacokinetics in Oral Drug Delivery

- Understanding pharmacokinetics in oral drug absorption
- Modeling and simulation of oral drug delivery systems
- Factors influencing the pharmacokinetic profile of drugs
- Bioequivalence and pharmacokinetic studies
- Case Study: Pharmacokinetic challenges in oral drug formulations

Module 11: Drug Delivery to the Brain via Oral Administration

- Mechanisms of blood-brain barrier penetration
- Challenges in CNS drug delivery
- Strategies for enhancing oral brain delivery
- Impact on neuropharmaceutical formulations
- Case Study: Oral delivery of Alzheimer?ÇÖs disease drugs

Module 12: Advances in Oral Vaccine Delivery

- Development of oral vaccines and immunizations
- Role of adjuvants in oral vaccine formulations
- Bioavailability and stability challenges
- Regulatory issues surrounding oral vaccines
- Case Study: Oral vaccine delivery systems for global health

Module 13: Excipients and Their Role in Bioavailability

- Understanding excipient functions
- Role of surfactants, solubilizers, and stabilizers
- Impact of excipients on drug release
- Challenges with excipient compatibility
- Case Study: Excipient interaction in oral formulations

Module 14: Bioavailability Enhancement Strategies

- Techniques for improving bioavailability
- Use of liposomes, micelles, and other nanocarriers

- Solid dispersion and complexation technologies
- Impact of food and gastric conditions on absorption
- Case Study: Bioavailability improvement using solid lipid nanoparticles

Module 15: Emerging Technologies and Their Impact

- 3D printing of oral dosage forms
- Smart oral drug delivery devices
- Artificial intelligence in drug formulation
- Personalized oral drug delivery systems
- Case Study: 3D-printed oral formulations for targeted delivery

Training Methodology

- Interactive Learning: Engaging videos, lectures, and webinars led by industry experts.
- Case Studies: Real-world applications and case studies to enhance practical understanding.
- Hands-On Exercises: Lab-based activities and formulation workshops.
- Collaborative Learning: Group discussions and peer-to-peer learning.
- Assessment and Feedback: Continuous evaluation through quizzes, assignments, and feedback sessions.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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