Office of
Research, Innovation
& Commercialization

Commercialization Handbook

Faculty of Pharmaceutical Sciences (FOPS)

Prepared by

Office of Research, Innovation and Commercialization

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ORIC UCP

University of Central Punjab

About ORIC

The Office of Research, Innovation, and Commercialization (ORIC) at the University of Central Punjab (UCP) serves as the driving force behind the university's research and innovation ecosystem. Guided by a clear vision of becoming a catalyst for transformative research and innovation, ORIC positions UCP as a hub where groundbreaking ideas not only advance academic knowledge but also shape industries and empower entrepreneurs with real-world impact.

In alignment with the Higher Education Commission's mandate, ORIC provides strategic, organizational, and technical support for all research activities at UCP. It ensures that faculty and students are equipped to pursue high-quality research, generate intellectual property, and translate discoveries into solutions that benefit both society and the economy. By fostering strategic partnerships and supporting sustainable commercialization, ORIC reinforces UCP's mission of building a future-ready ecosystem where ideas evolve into enterprises.

Anchored in the UCP Five-Year Strategic Plan (2025–2029), ORIC's efforts are centered on six key areas: Research Excellence, Commercialization and Intellectual Property, Industry–Academia Linkages, Entrepreneurship and Startups, Infrastructure and Core Facilities, and Internationalization. Together, these pillars provide a structured pathway for turning knowledge into impact, reinforcing UCP's role as a leader in research-driven societal development.

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1. Faculty of Pharmaceutical Sciences (FOPS)

The Faculty of Pharmaceutical Sciences (FOP), established in 2011, is dedicated to equipping students with practical knowledge to serve in all segments of pharmacy, including industry, hospital, community, forensic science, Drug Testing Laboratory, Drug Authority of Pakistan, and related sectors. All programmes of FOP are accredited by the Pharmacy Council of Pakistan (PCP) and the Higher Education Commission (HEC). With a team of highly qualified faculty that includes 10 PhDs specializing in diverse aspects of pharmacy, the faculty ensures high academic and professional standards.

A pharmacy degree opens doors to a diverse and rewarding career with opportunities in patient care, scientific research, and innovation. At FOP, the output centric approach is designed to prepare students for their future roles by providing a strong academic foundation combined with practical experience. The comprehensive and learner-centered programme encourages critical thinking, professionalism, and a commitment to lifelong learning, leadership, and community service.

Some of the salient features of FOP include accreditation with PCP and HEC, as well as international membership with the International Pharmaceutical Federation (FIP-AIM). The faculty offers advanced research facilities for undergraduate, graduate, and postgraduate students, along with modern teaching and assessment methodologies. Students benefit from well-equipped laboratories, internationally trained faculty, national and international collaborations in research and academia, and strong connections with the pharmaceutical industry, hospitals, and community pharmacies. The faculty also provides a friendly multicultural environment, fulfilling the needs of both students and society.

1.1. UV-Vis Spectrophotometer

The Shimadzu UV-1900i UV-Vis Spectrophotometer is a compact and high-performance instrument designed for accurate absorbance and transmittance measurements. It provides a spectral resolution of 1 nm and supports multiple modes including photometric, spectrum, quantification, kinetics, and time-scan, making it versatile for a wide range of pharmaceutical and analytical applications.

Company/Make: Shimadzu
Model: UV-1900i

Key Specifications:

- Measurement modes: Photometric, spectrum, quantification, kinetics, time-scan
- Spectral resolution: 1 nm
- Capable of quantitative and qualitative analysis
- Suitable for spectrum and impurity analysis
- Useful in structural analysis of organic compounds

UV-Vis Spectrophotometer

Applications:

- Characterization of nanomaterials
- Study of reaction kinetics
- Quantitative and qualitative analysis
- Spectrum analysis
- Impurity detection and identification
- Structural analysis of organic compounds

Locations

- Faculty: FOPS
- Department: Pharmaceutics
- Location: PL-301, Building P, 3rd Floor
- Lab: Pharmaceutics Research Lab

1.2. High-Performance Liquid Chromatography (HPLC)

The Shimadzu LC-20 Series High-Performance Liquid Chromatography (HPLC) system is designed for both analytical and preparative chromatography applications. It delivers excellent resolution, sensitivity, and reproducibility, making it highly suitable for pharmaceutical, cosmetic, and chemical analysis.

Model Information

Company/Make: Shimadzu
Model: LC-20

HPLC

Technical Specifications

- Pump: Double parallel plunger
- Flow rate: 0.0001–10 ml/min
- Operation: Gradient and Isocratic
- Column: C-18

Applications

- Quantitative analysis of pharmaceuticals, cosmetics, and chemicals
- Qualitative analysis
- HPLC method validation

Location:

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.3. Rotary Evaporator

The Heidolph G-3 Rotary Evaporator is a reliable and intelligent evaporation system designed for safe and efficient solvent removal. It features an overheat protection design to prevent water baths from running dry, a detachable control panel for ease of use, and a durable vacuum seal and vapor tube system that ensures long-term operation.

Rotary Evaporator

Model Information

Company/Make: Heidolph
Model: G-3

Technical Specifications

- Temperature controlled system
- Capacity: 5 mL – 50 mL

Applications

- Evaporation of solvents
- Preparation of extracts
- Preparation of nanomaterials, liposomes, niosomes, and exosomes
- Degassing of gels

Locations

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.4. Temperature-Controlled Centrifuge

The Innotech Micro Centrifuge is a temperature-controlled centrifuge designed for efficient separation and sample preparation. With its high-speed performance and compact design, it is ideal for pharmaceutical and nanotechnology research.

Model Information

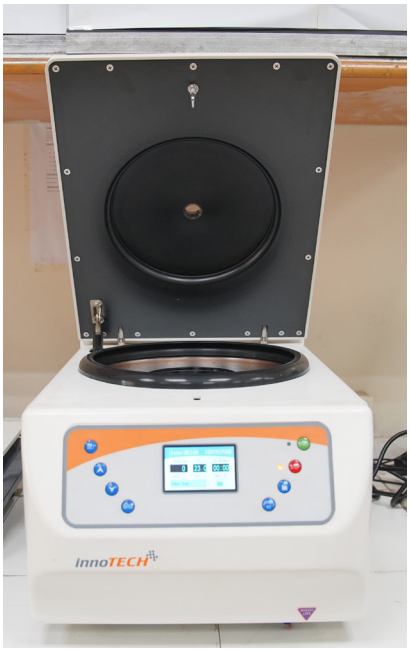
Company/Make: Innotech
Model: Micro Centrifuge

Key Specifications:

- Maximum Speed: 1600 rpm
- Capacity: 1.5 mL × 24 Eppendorf tubes

Applications

- Development of nanocarriers
- Separation of insoluble materials



Temperature-Controlled Centrifuge

Location

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.5. Franz Diffusion Cell Assembly

The Franz Diffusion Cell Assembly is a specialized instrument designed for drug release and permeation studies. It features a temperature-controlled water jacket system and multiple channels, making it ideal for evaluating pharmaceutical formulations, cosmetics, and topical products.

Franz Diffusion Cell Assembly

Model Information

Company/Make: — Model: Franz Diffusion Cell Assembly

Key Specifications:

- 3 channels with temperature-controlled water jacket assembly

Location:

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.6. Ultra-Sonicator

The Ultra-Sonicator is a versatile bath sonicator designed for laboratory-scale applications. It enables efficient ultrasonic processing for material preparation, extraction, purification, and chemical reactions. Its precision and reliability make it a valuable tool in pharmaceutical and research laboratories.

Ultra-Sonicator

Model Information

Company/Make: A&E
Model: Bath Sonicator

Key Specifications:

- Bath type sonicator
- Suitable for laboratory-scale processing

Applications

- Mixing and homogenization
- Milling and dispersion
- Emulsification and extraction
- Degassing and sono-chemical reactions
- Production of nanoparticles
- Wastewater purification
- Extraction of seaweed polysaccharides and plant oils

Location:

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.7. High-Shear Homogenizer

The High-Shear Homogenizer is a powerful laboratory instrument designed for high-speed homogenization, emulsification, and suspension preparation. It ensures uniform particle size distribution and consistency, making it essential for pharmaceutical and research applications.

High-Sheer Homogenizer

Model Information

Company/Make: Heidolph
Model: High-Speed/High-Shear Homogenizer

Key Specifications:

- Speed range: 5000–25000 rpm
- Capable of high-speed homogenization

Applications

- Preparation of emulsions and suspensions
- Homogenization of samples for uniform consistency
- Development of nanoparticles

Location:

Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.8. Stability Chamber

The Stability Chamber is a temperature and humidity-controlled unit designed to provide precise environmental conditions for stability testing. It is widely used in pharmaceutical and cosmetic research to evaluate product shelf life, formulation robustness, and long-term quality.

Model Information

Company/Make: AAS Technologies
Model: Stability Chamber

Stability Chamber

Key Specifications:

- Temperature and humidity-controlled system
- Suitable for both short-term and long-term stability studies
- Ensures consistent and reproducible conditions

Applications:

- Stability testing of pharmaceutical formulations
- Evaluation of cosmetic product stability
- Shelf life determination
- Quality control and regulatory compliance studies

Location:

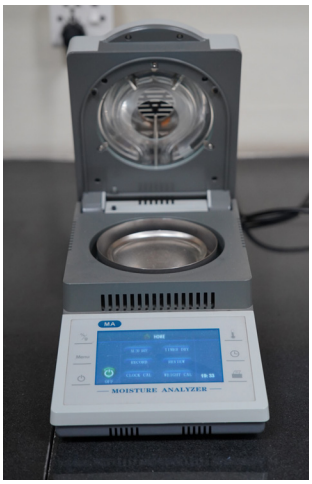
Faculty: FOPS
Department: Pharmaceutics
Location: PL-301, Building P, 3rd Floor
Lab: Pharmaceutics Research Lab

1.9. Moisture Analyzer

The Moisture Analyzer (also called a moisture balance or moisture meter) is a laboratory instrument used to measure the moisture content of a sample by drying it and calculating the weight loss. It ensures precise control in pharmaceutical and industrial applications, supporting quality, safety, and compliance.

Model Information

Company/Make: Moisture Analyzer Co
Model: MA-50/110



Moisture Analyzer

Key Specifications:

- Suggested sample: 3–10 g
- Heating temperature: 50–180°C
- Moisture range: 0–100%
- Heating time: 0–99 minutes

Applications:

- Moisture testing of raw materials, excipients, and finished drugs
- Monitoring shelf life, taste, and texture of pharmaceutical products
- Supporting legal compliance and quality assurance
- Equipment protection through controlled moisture levels
- Ensuring correct dyeing, weaving, and weight pricing in industrial processes

Location:

Faculty: FOPS
Department: Pharmaceutical Chemistry
Location: PL-401, Building A, 4th Floor
Lab: Research Lab 2

1.10. Microplate Reader (ELISA)

The Microplate Reader, also known as an ELISA reader, is an optical instrument that measures absorbance (optical density or OD) at specific wavelengths. It is widely used in ELISA assays to detect antigen-antibody reactions by monitoring color changes from enzyme-substrate interactions. It also supports molecular biology, environmental analysis, and pharmaceutical testing.

Microplate Reader

Model Information

Company/Make: Rayto
Model: RT-6000

Key Specifications:

- Standard wavelength range: 400–630 nm
- Absorbance range: 0–3.500 A
- Precision (0–2.0 A): ±0.5% or ±0.005 A
- Display: 5.7'' LCD
- Reading speed: Continuous mode < 5 s, Step-by-step mode < 15 s
- Warm-up time: 1 minute

Applications:

- Detection and quantification of proteins, antibodies, antigens, and hormones
- Concentration measurement of DNA, RNA, and proteins using colorimetric dyes
- Quantification of living or dead cells through metabolic activity assays
- Detection of anti-drug antibodies (ADA) in therapeutic biologics
- Environmental testing (pollutants, heavy metals, toxins in soil and water using ELISA kits)

Location:

Faculty: FOPS
Department: Pharmaceutical Chemistry
Location: PL-401, Building A, 4th Floor
Lab: Research Lab 2

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