Fundamental Principles of Pharmaceutical Technology

Fundamental Principles of Pharmaceutical Technology
(Grundlagen der Arzneiformenlehre)

Lecture: 2 hours per week (summer semester)
ECTS credits: 2

Topics:
Manufacture and properties of classical pharmaceutical dosage forms: powders, granules, tablets, capsules, solutions, eye drops, ointments, cremes, emulsions, suspensions, gels, suppositories.
Basic principles of dosage form design and drug application.

Literature:

Pharmaceutical Technology I
(Arzneiformenlehre I)

Practical Course: 6 hours per week (winter and summer semester)
ECTS credits: 6

Topics:
Manufacture and properties of classical pharmaceutical dosage forms: powders, granules, tablets, capsules, solutions, eye drops, ointments, cremes, emulsions, suspensions, gels, suppositories.
Basic principles of dosage form design and drug application.

Literature:

Method of assessment: written examination
Physical Pharmacy, Pharmaceutical Technology and Biopharmacy
(Arzneiformenlehre II)

Lecture: 3 hours per week (winter and summer semester)
ECTS credits: 8

Topics:
The lecture is split into three parts: physical pharmacy, pharmaceutical technology and biopharmacy. The lecture on physical pharmacy covers physicochemical aspects that are relevant to the design, manufacture and stability of dosage forms. This also includes physicochemical methods for the characterization of pharmaceutical preparations. The part ‘pharmaceutical technology' covers the manufacture of dosage forms and the basic principles of drug delivery. Implemented into this lecture are also experimental drug delivery systems and current trends in the manufacture of drug delivery systems. The part ‘biopharmacy' explains the basic principles of pharmakokinetics and relates the design principles of drug delivery systems to their efficacy during in vivo applications.

Literature:
Bauer, Frömming, Führer, Pharmazeutische Technologie, Gustav Fischer Verlag.
Atkins, Physical Chemistry, Freeman, New York.
Sucker, Fuchs, Speiser, Pharmazeutische Technologie, Georg Thieme Verlag, Stuttgart.
Stricker, Physikalische Pharmazie, WVG, Stuttgart.
Müller, Hildebrand, Pharmazeutische Technologie: Moderne Arzneiformen, WVG, Stuttgart.

no assessment

Standards of the Pharmacopoeia Concerning Preparation of Dosage Forms
(Anforderungen des Arzneibuchs an die Herstellung von Arzneiformen)

Seminar: 1 hour per week (winter and summer semester)
ECTS credits: 1

Topics:
Statistics, tablet processing, film coating, sterile preparation techniques, lyophilisation, parenteral emulsions, nanoparticles, liposomes, GMP, registering, blood preparations, sera and vaccines, stability.

Literature:
Pharmacopoeia Europaea

no assessment
Pharmaceutical-Technological and Biopharm. Analytical Methods  
(Pharmazeutisch-technologische und biopharm. Analysenmethoden)

Seminar: 1 hour per week (winter and summer semester)  
ECTS credits: 1

Topics:  
Statistics, particle size determination (with sieves, Coulter Counter, PCS and laser diffractometry), thermal analysis (DSC, TG), rheological determinations, x-ray diffractometry, bioavailability testing, drug targeting.

Literature:  
R.H. Müller, W. Mehnert (eds), Particle and surface characterisation methods, medpharm scientific publishers, Stuttgart, 1997.  

no assessment

Pharmaceutical Technology II  
(Arzneiformenlehre II)

Practical Course: 22 hours per week (winter and summer semester)  
ECTS credits: 19

Topics:  
Preparation, testing and properties of classic and recently developed pharmaceutical dosage forms  
(solutions, colloidal solutions, eye drops and ophthalmic ointments, infusions, injections, powders, granules, capsules, tablets, controlled release tablets, ointments, creams, emulsions, suspensions, gels, suppositories, microparticles, microcapsules, liposomes, parenteral emulsions)  
physical-chemical principles concerning their preparation and properties, sterile preparation techniques and their testing, preparation techniques for chemotherapeutics, adsorption to solid surfaces, stability testing, incompatibilities, drug release, biopharmaceutics, packaging (plastics and glass)

Literature:  
R.H. Müller, G.E. Hildebrand, Pharmazeutische Technologie: Moderne Arzneiformen,
Method of assessment: written examination