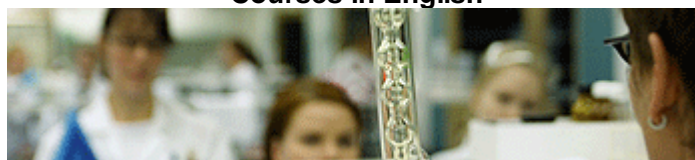


Courses in English



Faculty of Pharmacy offers a number of courses in each major subject in English. The courses are open for degree students of Pharmacy and exchange students.

The following courses will be offered in English during the academic year 2009-2010:

Division of Pharmaceutical Technology

590230 Laboratory experience within a research group (3-5credits)

Time: Laboratory period can be agreed for either term (80-120 hours supervised research work at the Division of Pharmaceutical Technology)

Contact person: Dr. Jyrki Heinämäki, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. jyrki.heinamaki@helsinki.fi)

Course description: During the present course the student can make supervised research work and get a laboratory experience as a member of the division research group. The student will receive experience in literature search, preparing research plan, selection and application research techniques, performing experiments, data analysis and reporting the results. The final report will be written like a research article. Prerequisite for participating this course is that the basic studies in Pharmaceutical Technology have been completed.

590229 Literature review in Pharmaceutical Technology (3-5 credits)

Time: Literature review period can be agreed for either term (80-130 hours supervised research work at the Division of Pharmaceutical Technology)

Contact person: Prof. Jouko Yliruusi, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. jouko.yliruusi@helsinki.fi)

Course description: During the present course the student can make supervised literature review on the up-to-date research topics in the field of Pharmaceutical Technology. The student will get experience in literature search, reading and application of research articles, and writing the scientific report. Prerequisite for participating this course is that the basic studies in Pharmaceutical Technology have been completed.

590176 Solid state analysis of Pharmaceutics, SSAP (3 credits)

Time: 26.10.-2.12.2009, Mon and Thu 12-14 (9.11. 14-16)

Contact person: PhD Mirza Sabiruddin, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki.

Course description: This course introduces the polymorphism phenomenon in pharmaceutical materials and its importance in the pharmaceutical setting. The course focuses on tools used for solid state analysis, and process analytical technology (PAT) tools used in R&D and manufacturing environment are also introduced. The course aims to provide a basic understanding of solid state forms so that the best polymorphic form can be selected for pharmaceutical development. The SSAP course will have lectures and all students will perform an experimental crystallization. Completion of the course requires a report together with a presentation on the experimental work. This is an advanced level course in Pharmaceutical Technology.

59072 Controlled drug delivery systems (3 credits)

Time: 7.9.-7.10.2009, Mon 10-12 and Wed 12-14, Biocenter 2, lecture hall 2011.

Contact person: Prof. Jouni Hirvonen, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. jouni.hirvonen@helsinki.fi)

Course description: This course introduces currently used controlled drug delivery techniques and future trends related to this research area. Oral, transdermal and inhalation drug delivery systems are discussed. Main mechanisms including dissolution, diffusion, osmosis, ion-change and GI-retention are described. In addition, smart polymers as well as meso- and nanoparticles that are promising future systems in the field of controlled drug delivery, are introduced. The present course will have lectures, home works and practices in calculus. This is an advanced level course in Pharmaceutical Technology.

590117 Granulation and tablet compression technology (3 credits)

Time: 30.11.- 18.12.2009 (detailed information in weboodi).

Contact person: Dr. Osmo Antikainen, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. osmo.antikainen@helsinki.fi)

Course description: This course involves modern granulation techniques (including pelletisation), granule formation mechanisms, monitoring and control of fluid-bed and high-shear granulation processes, tablet compression phenomena, monitoring and control of tablet compression processes, and characterization of tablets. The course is composed of lectures, demonstrations and seminar presentations. Literature is in English. This is an advanced level course in Pharmaceutical Technology.

59171 Seminars and excursion to pharmaceutical industry (2 credits)

Time: Advanced-level seminars in Pharmaceutical Technology are held during both terms. Excursion to pharmaceutical industry is arranged in the spring term in April-May 2010.

Contact person: Dr. Leena Peltonen, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. leena.peltonen@helsinki.fi)

Course description: This course introduces recent research trends in the field of Pharmaceutical Technology and introduces basic operations performed in pharmaceutical industry (excursion part). Seminars are given by both advanced-level and Ph.D. students as well as established researchers. The participant should attend at least ten seminars and give one own seminar presentation. Completion of the course requires a travel report related to excursion. This is an advanced level course in Pharmaceutical Technology.

Courses in Industrial Pharmacy Formulation I (5 credits)

Formulation II (4 credits)**Formulation III (6 credits)**

Time: More detailed information at www.pharmtech.helsinki.fi/industrial-pharmacy.

Contact person: Prof. Anne Juppo, Faculty of Pharmacy, Division of Pharmaceutical Technology, University of Helsinki (email. anne.juppo@helsinki.fi)

Course description: Formulation I and II can be taken as a book exam. Please see more detailed information www.pharmtech.helsinki.fi/industrial-pharmacy.

Division of Biopharmaceutics and Pharmacokinetics**590237 Advanced course in Biopharmaceutics, lectures (3 credits)**

Time: 01.09.09 -22.10.09, Tue and Thu 12-14.

Contents: Course deals with methods used in biopharmaceutical drug research and development of drug delivery. Course combines knowledge learned in the courses of Physical Pharmacy and Advanced Biopharmaceutics.

Material: Book and the laboratory work introductions

Drug Delivery –engineering principles for drug therapy, W.M. Saltzman, 2001.

590289 Advanced course in Biopharmaceutics, laboratory work (3 credits)

Time: autumn 2009

Contents

Laboratory work in the field of biopharmaceutics containing pharmacokinetic studies on rats and humans, cell lab work and pharmacokinetic modeling.

590236 Advanced course in Pharmacokinetics (5 credits)

Time: 2.2.-4.3. 2010,

Contents: Lectures (in Finnish) and pharmacokinetic calculations in the field of pharmacokinetics.

For the foreign students the tutoring sessions based on the book will be organized.

Material: Clinical Pharmacokinetics – Concepts and Applications, M. Rowland and T.N. Tozer, 3rd ed. and Pharmacokinetic problems (will be given in during the course).

590226 Research Methods in Gastrointestinal Drug Delivery (3 credits)

Book exam concerning methods used in research of GI drug delivery. Exam dates in webodi, Material:

Models for assessing drug absorption and metabolism, R.T. Borchardt, P.L. Smith, G. Wilson, 1996, pp. 1-66;

Nuclear medicine in pharmaceutical research, A. Perkins, M. Frier (eds.), 1999, pp. 1-22, 57-112;

Physiological Pharmaceutics Barriers to drug absorption, N. Washington, C. Washington, C. Wilson, 2001 (2nd ed.), pp. 37 – 174

590284 Cells – Biomaterials interactions, Pharmaceutical and medical applications (3 credits)

Time: 1.-26.3.2010, Mon, Thu and Fri 10-12.

Contents: This lecture course (24 h lectures) introduces cell-biomaterials interactions, and the applications polymers used in body. Course gives outline of essential chemistry and diagnostics of biomaterials, peptides, oligonucleotides and carbohydrates. In the course functionalization of surfaces and nanocarriers with peptides and oligonucleotides is focused. Hydrogels, nano- and microparticles and self assembly systems used in cell systems is also included. Biodegradable polymers and cell type specific response to biomaterials and tissue response and biomaterials integration is included. Techniques to investigate cellular and molecular interactions in the host response to implant biomaterials and nanotechnology in tissue engineering are one of the topics during the course.

590286 Book exam in biopharmaceutics (1-3 credits)**Contents:**

One book focusing biopharmaceutical and pharmacokinetic research can be selected to exam (100 pages/credit point). The book is settled with professor Marjo Yliperttula.

Material:

G. Gordon Gibson and Paul Skett: Introduction to drug metabolism (3rd ed), 2001, Nelson Thornes, Cheltenham, Iso-Britannia

Margaret Robson Wright: An Introduction to Chemical Kinetics, 2005, Wiley, Chichester, Iso-Britannia

Ian W. Hamley: Introduction to soft matter, synthetic and biological self-assembling materials, 2007, Wiley.

J. Rick Turner: New Drug Development: Design, Methodology and Analysis, 2007, Wiley.

Christopher Howe: Gene Cloning and Manipulation, (2nd ed), 2007.

Andrew R. Leach and Valerie J. Gillet: An introduction to chemoinformatics, 2007, Springer.

Guofeng You, Marilyn E. Morris: Drug Transporters: Molecular Characterization and Role in Drug Disposition, 2007.

590253 Nanoscience IV (5 credits)

Time: spring 2010

Contents: The course deals with nanotechnology in biopharmaceutical and pharmaceutical research. How nanotechnology is applied and how nanoscale phenomena are exploited in pharmaceutical sciences.

Division of Pharmaceutical Biology**590018 Pharmaceutical Microbiology (3 credits)**

A book examination, time can be agreed with the teacher. The purpose of the pharmaceutical microbiology course is to introduce the microbial world. Students are familiarized with the structures and vital functions of the micro-organisms. Based on this knowledge students are able to understand how antimicrobial drugs affect the micro-organisms and how microbes inflict diseases. Basics of immunology and human defense against micro-organisms are also discussed.

590012 Phytotherapy (2 credits)

A book examination, time can be agreed with the teacher. The goal of the course is that the student understands the use of herbal remedies and is able to advise patients in their use. The herbal remedies are discussed according to therapeutic indications, pharmacology, adverse effects, interactions with drugs and contraindications.

590242 Examination of Biological Activity 7 credits

Agreed with the teacher. This course gives an introduction to *in vitro* screening of biological activity through lectures, laboratory experiments and literature assignment. During the course, students will learn issues related to different assay and detection technologies, assay development and optimisation, miniaturisation and automatisisation, etc. The course is suitable for advanced

level students and requires previous knowledge on drug development process.

Division of Pharmaceutical Chemistry

590132 Drug Synthesis (4 credits)

590134 Bioanalysis (5 credits)

590179 Mass Spectrometry (3 credits)

Time: 18.1.- 24.2.2010, Mon and Wed 8-10, Biocenter 2, lecture room 1015

590287 Introduction to molecular modelling and drug design (5 credits)

Time: The lectures and computer assignments are held as follow: Lectures: Monday 1.2-22.2 10-12, 1.3-8.3 12-14 and 15.3 8-10 in lecture hall 2012. Wednesday 3.2-17.2 and 3.3-10.3 12-14 and 24.2 10-12 in lecture hall 1015 (except from 10.3 lecture hall 2012). Assignments: Friday 12.3 12-16 and Tuesday 16.3 12-16 Info 138 and Thursday 18.3 8-12 Info 170.

590251 Final examination in pharmaceutical chemistry (5 credits)

A book examination, material and time can be agreed with the teacher (Yli-Kauhaluoma)

Organic Chemistry for biochemists and pharmacists I, II and III (590171, 590172 ja 590173)

Book examinations, material and time can be agreed with the teacher

590218 Basics of Analytics (4 credits)

A book examination, material and time can be agreed with the teacher

Division of Pharmacology and Toxicology

59084 Biochemical Basis of Neuropharmacology, advanced level (3 credits)

Time: 16.3.- 22.4.2010, Tue and Thu 8-10, Biocenter 2, lecture hall 2011.

590283 Basics of Molecular Biology in Pharmaceutical Sciences (3 credits)

Time: 9.3.-14.4.2010, Tue and Wed 10-12, Biocenter 2, lecture hall 1015

Division of Social Pharmacy

590180 Research Methods in Social Pharmacy(4 credits)

The study material and conduct of the course can be agreed with the teacher

590185 Outcomes Assessment and Rationality of Drug Therapy (3 credits)

First meeting in March 2010. Other meetings in May.

Teacher: Prof. Alan Lyles (University of Baltimore)

590187 Theme Seminars in Social Pharmacy (3 credits)

590250 Comprehensive Medication Reviews and Clinical Pharmacy (4 credits)

Course will be organised in March-May 2010. Exact times available in the spring. Interactive seminars and workshops.