ONLINE LECTURES IN BIOSCIENCE

The 4EU+ European University Alliance is a transnational strategic association of Charles University in Prague, Heidelberg University, Sorbonne University in Paris, the University of Warsaw, the University of Copenhagen and the University of Milan. 4EU+ aims to create a European University with compatible courses of study, flexible study paths for students and manifold mobility options for students and academic staff. (www.4euplus.eu)

In the 2021 summer semester Heidelberg University offers online lectures at the Faculty of Biosciences to students from 4EU+ universities: Charles University, Sorbonne University, University of Copenhagen, University of Milan, and University of Warsaw.

The lectures are organized by the Faculty of Biosciences and offered either as daily block courses (up to one and a half month) or weekly courses (four months). All courses are held in English as synchronous video conferences. The admission is granted to a limited number of students of biosciences. Students can only participate as guest students and are therefore not formally enrolled at Heidelberg University.

Course registration:
https://forms.office.com/Pages/ResponsePage.aspx?id=L38FPWaE_UOKVl0zTRPYlRaFiuAMwJNIrHMJc8FLt_5UMUxDTlFFVjY3OERaREpYRUdJNDhYSU1MMSQlQCN0PWcu
Deadline: 2 April 2021
Course period: 12 April to 16 July 2021 (the exact date and time differ for each course)
ECTS: 2 (for recognition, please check before with the coordinator at the home university)
Overview of courses in the course catalogue:
https://lsf.uni-heidelberg.de/qisserver/rds?state=wtree&search=1&trex=step&root120211=128842|129411|129597&P.vx=mittel

After the deadline, students receive an email notice of the selection process and further information on how to access the course.

Please check below for a detailed course description and a link to the course catalogue:

FOCUS I CANCER: MOLECULAR PRINCIPLES OF CANCER DEVELOPMENT	
Time	13 04 2021 – 21 05 2021
Frequency	Daily, 8:15-10:00h
Format	Online-Lecture
Level	MA
Language	English
Contact	Eva Gundel (e.gundel@dkfz.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Cancer Biology
Description	The lecture series follows in most parts the book by Robert Weinberg „The Biology of Cancer“.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=331325&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	20

FOCUS I DEV: GENETIC AND EPIGENETIC MECHANISMS

Time	12 04 2021 – 20 05 2021
Frequency	Daily, 8:15 - 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Petra Kaspar (petra.kaspar@cos.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Developmental and Stem Cell Biology.
Course Description	The Focus I lecture covers the topics: — Genetic model systems — Genetic screens and mapping — Transgenesis approaches — Genetics of retinal development — Comparative evolutionary genetics — Genetic tools for lineaging — Genetic tools for clone generation — Genetic and epigenetic regulation mediated by non-coding RNAs — Developmental genetics of plants: patterning the root — Signals and networks in stem cells — Cellular heterogeneities and molecular noise — Developmental genetics of Drosophila — Epigenetics in plant development — Molecular mechanisms of symbiosis — Developmental timing- the genetics of the somite segmentation clock — Epigenetics and development — Genome engineering in mouse and non-model organisms — Population genomics and WGA genetics
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=332168&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	10

FOCUS II DEV: STEM CELL BIOLOGY	
Time	07 06 2021 – 16 07 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Petra Kaspar (petra.kaspar@cos.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Developmental and Stem Cell Biology
Course Description	The Focus II lecture covers the topics: — Cell cycle regulation — Asymmetric cell division — Stem cell regulation in plants: Developmental principles and the shoot meristem — Stem cell regulation in plants: root meristem — Stem cell regulation in plants: cambium — Germ line stem cells in Drosophila — Conserved signaling pathways in stem cells — Stem cell systems in early metazoans — Stem cells in higher eukaryotes — Neuronal stem cells in vertebrates — Vasculature and stem cells — Stem cell regulation in humans
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=331877&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	10

FOCUS I INFDIS: MOLECULAR VIROLOGY	
Time	12 04 2021 – 30 04 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Ilka Rebhan (ilka.rebhan@med.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Infectious Diseases.
Course Description	The lecture 'Molecular Virology' introduces basic priciples of Virology and will then focus in more detail on the different steps of virus replication, comparing strategies of different virus families. Further topics include viral pathogenesis, latency and antiviral therapy. The lecture will be accompanied by tutorials with a focus on experimental strategies.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=333474&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	10

FOCUS II INFDIS: PATHOGENIC MICROORGANISMS	
Time	21 06 2021 – 02 07 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Ilka Rebhan (ilka.rebhan@med.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Infectious Diseases.
Course Description	The lecture covers topics in disease mechanisms of bacteria and parasites. In detail, virulence principles (adhesion, motility, toxins, and secretion systems) of selected pathogenic microorganisms are discussed on the molecular level. Another focus are host pathogen interactions. Finally, the lecture deals with immune defense mechanisms to combat infections.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=331957&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	12

FOCUS I MAPS: PLANT CELL & DEVELOPMENTAL BIOLOGY	
Time	12 04 2021 – 30 04 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Petra Kaspar (petra.kaspar@cos.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Molecular and Applied Plant Sciences
Course Description	The Focus I lecture covers the topics: — Specification of cell identity in roots — Epigenetics — Leaf development — Cell polarity — Evolution of the flower — Control of cell behaviour in the shoot meristem — Cellulose and pectin biosynthesis, cell mechanics and mechanical signalling — Sexual and asexual plant reproduction through seeds — Methods in plant cell biology — Nano sensors for in vivo analysis of ions and metabolites — Trafficking of receptors and transporters
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=339412&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	12

FOCUS II MAPS: PLANT SIGNAL TRANSDUCTION & METABOLISM	
Time	21 06 2021 – 02 07 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Petra Kaspar (petra.kaspar@cos.uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Molecular and Applied Plant Sciences.
Course Description	The Focus 2 lecture covers the topics: — ABA — Compartimentation of secondary metabolism — Coordination of organellar activities — Strigolactones — Regulation of flavonoid and stilbene metabolism — Brassinosteroids and cell surface receptor-mediated signalling — How plants sense their environment
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=339415&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	12

FOCUS I MCB: ADVANCED MOLECULAR AND CELLULAR BIOLOGY	
Time	12 04 2021 28 05 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Victor Winter (winter@uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Molecular and Cellular Biology.
Course Description	The lecture series covers topics like: — Advanced mass spectrometry — Enzyme kinetics — Oxidative protein folding — Modelling of reactions — NMR, Protein folding & chaperones — Protein modelling — Yeast as a model system — Drosophila as a model system — C. elegans as a model system — Protist models and endosymbiotic organelles — Drug discovery — Drug development — Vesicular transport — Ubiquitin — SUMO and more.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=331598&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	8

FOCUS II NEURO: MOLECULES, NEURONS, NETWORK, BEHAVIOUR	
Time	10 05 2021 – 18 06 2021
Frequency	Daily, 8:15 – 9:45h
Format	Online-Lecture
Level	MA
Language	English
Contact	Victor Winter (winter@uni-heidelberg.de)
ECTS	2
Subject	Molecular Bioscience
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Neurosciences.
Course Description	Lecturers from the Interdisciplinary Center of Neuroscience (IZN) will introduce the students to their field of research and explain the current scientific progress in these fields. The objective of this lecture series is to provide students with an accurate overview of the scientific activities in the neuroscience community of Heidelberg and Mannheim. This will enable a competent choice of an IZN laboratory for the Master thesis.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=332903&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	8

BIOCHEMISTRY AND PATHOBIOCHEMISTRY	
Time	13 04 2021 – 30 06 2021
Frequency	Weekly (every Tuesday), 8:30 – 10:00h
Format	Online-Lecture
Level	MA
Language	English
Contact	Rainer Beck (beck@bzh.uni-heidelberg.de)
ECTS	2
Subject	Biochemistry
Learning objectives	Students acquire, broaden and reinforce special knowledge in the area of Biomolecules.
Course Description	In this lecture series, various researchers as experts in their field of study give a detailed overview over the molecular basis of disease development and also give insights into their current research. Among the topics are (this is not the complete list): — Lysosomal Storage Diseases — Pathobiochemistry of Hepatitis C Virus — Influenza A Virus — Bacterial Toxins — Autophagy and mTOR signaling — Tumor metabolism — Tumor Survival — Biochemistry of Obesity The objective of this lecture series is to help students understand the complex interplay of biomolecules on a molecular level, and to connect this knowledge with disease development and ultimately treatment or diagnostics.
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=331494&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	20

INTRODUCTION TO THE IMMUNE SYSTEM	
Time	13 04 2021 – 30 06 2021
Frequency	Weekly (every Tuesday), 16:00 – 17:00h
Format	Online-Lecture
Level	BA
Language	English
Teacher	Maria Dinkelacker (m.dinkelacker@dkfz-heidelberg.de)
ECTS	2
Subject	Biosciences
Learning objectives	Students acquire, broaden and reinforce basic knowledge in the area of immunology.
Course Description	The lecture covers the following topcs: — 23.4. Basic Concepts in Immunology — 30.4. Innate Immunity — 7.5. B cell Immunology — 14.5. T cell Immunology — 21.5. The generation of lymphocyte antigen receptors — 28.5. Antigen presentation of T cells — 4.6. Signaling through receptors in the immune system — 11.6. humoral immune response — 18.6. the adaptive immunity — 25.6. the mucosal immune system — 02.7. failures of host defense mechanisms — 09.07. allergy and allergic disease — 16.7. Autoimmunity and transplantation Topics might be shifted upon demand. Literature: Janeway Immunobiology, 9th edition, paperback (please buy and prepare)
Link	https://lsf.uni-heidelberg.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=335691&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung
Free places	10