How many courses do I have to take?
Four courses within three years are compulsory. Of these courses, at least two have to cover the area “Scientific Courses”, one has to cover the area “Transferable Skills & Management Courses”, and one is free of choice.

Course Areas
SC – Scientific Courses
TM – Transferable Skills & Management Courses

Which courses shall I take?
This depends on your educational background and your research interests and should be discussed with your thesis committee.

How to register?
NEW: The enrolment is done within the system ZEuS. Please enrol by using the link at the end of each course description on our website:

– chembiol.uni.kn
  → training → scientific-courses
  → transferable-skills

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Multiplexing Cell-Based Assays: Get more Biologically Relevant Data per Well
20 – 21 February, 10:00 – 17:00 h

Several methods have been developed to quantify soluble analytes in biological fluids and tissue culture samples, including bioassays, ELISA and PCR. However, using a multiplex bead array assay is the technology of choice when you want to simultaneously detect and quantify multiple biomolecules such as cytokines, phosphoproteins, growth factors, human immunoglobulins etc. in a single sample.

This two-day seminar covers basic principles of the multiplex technology – including assay set-up and analysis with hands-on sessions using the Bio-Rad Luminex Cytometric Bead Analyser to address workflow and sample preparation.

Lecturer
Annette Sommershof, Gaby Neumann, Ricarda Schwab

Course Area
SC

Participants
max. 8

Registration
via e-mail to flowkon@uni-konstanz.de

In cooperation with

Strategic Application for Jobs outside Academia
22 – 23 February, 9:00 – 17:00 h

In this workshop we will define necessary steps to identify personal career goals. You will learn which of your specific technical and personal skills are in demand on the job market. Is it enough to browse through job ads or do I have to use my personal or professional network to find a job? What are the options for unsolicited applications? What can I do to ensure that my application gains attention?

In the first part the participants will learn how to convincingly present their individual highlights in the CV. In the second part, participants get the opportunity to train self-presentation and professional appearance for interviews, phone calls and recruiting events and they will be primed for specific situations when confronted with awkward questions or unexpected challenges.

Lecturer
Barbara Hoffbauer

Course Area
TM

Participants
max. 12

Registration
– chembiol.uni.kn/training/transferable-skills-management-courses/
Bio Visualisation with Blender and MembraneEditor
28 February – 01 March, 9:00–18:00 h

The visualisation of biological mesoscopic and molecular structures – such as cells and their internal membranes – are becoming an established field in the scientific community as many processes which cannot be captured by actual microscopy and spectroscopy techniques can be communicated by 3D modelling and animation.

This two-day hands-on workshop will introduce to basic modelling and visualisation techniques with Blender and CELLmicrocosmos MembraneEditor on the first day. The second day will be devoted towards the use of web technologies in combination with Blender and Virtual Reality-related technologies to communicate the 3D models.

Lecturers
Björn Sommer, Mehmood Ghaffar

Course Area
SC

Participants
max. 12

Registration
– chembiol.uni.kn/training/scientific-courses/

Flow Cytometry Data Analysis in FlowJo
07 March, 9:00–18:00 h

Familiarize yourself with one of the top software packages for analyzing flow cytometry data. In an introductory part you will learn how to use the FlowJo® workspace, including how to load experimental data, statistics and gates, create groups and analyses, and generate tabular and graphical layouts. A second part in the afternoon will cover advanced features and special analysis platforms including compensation, cell cycle and proliferation and analysis techniques for high-dimensional cytometry data including SPADE, t-SNE. The seminar will be complemented by a practical hands-on session in which you will have the opportunity to discuss your individual analysis face-to-face with the FlowJo expert (prerequisite to bring your own computer).

New and current users of FlowJo flow cytometry analysis software are encouraged to attend.

Lecturers
Annette Sommershof, Christoph Freier, Ricarda Schwab

Course Area
SC

Participants
max. 25

Registration
via e-mail to flowkon@uni-konstanz.de

In cooperation with

Flowkon
Flow Cytometry

FLOWJOO, LLC
DATA ANALYSIS SOFTWARE
Statistical Literacy
04 – 06 April, 9:00 – 17:00 h

The often over-heard question “What test should I use?” reflects a poor understanding of statistics as a static & authoritative black box that is applied after results are obtained. It is essentially statistical illiteracy, a failure to properly understand and use statistics as a part of scientific inquiry. The Statistical Literacy workshop aims to provide the foundation to become statistically literate.

The workshop consists of three sections: Collecting, Describing & Inferring. Practical tools and the theoretical background to understand how they work will be introduced. Mathematical equations will be used when helpful and are provided in the reference book, but they will not be the focus of the workshop. Our goal is to enlighten via intuitive understanding, not confuse via math.

Lecturer
Rick Scavetta

Course Area
TM

Participants
max. 12

Registration
– chembiol.uni.kn/training/transferable-skills-management-courses/

Analysis of Biological Networks
10 – 11 April, 9:00 – 17:00 h

This two-day workshop provides both theoretical foundations for network analysis as well as hands-on tutorials with the network analysis platform Vanted.

Participants will learn how to build or derive networks, how to integrate their data into networks, how to analyse networks structurally, how to represent networks in standardised ways, and how to visualise them.

Lecturer
Falk Schreiber, Karsten Klein, Björn Sommer

Course Area
SC

Participants
max. 12

Registration
– chembiol.uni.kn/training/scientific-courses/
Principles and Applications of Flow Cytometry and Cell Sorting
10–12 April, 10:00–17:00 h

This course will provide theoretical and practical training on flow cytometry and fluorescence-activated cell sorting (FACS). The morning lectures outline principles of flow cytometry, the properties of fluorophors and common applications of flow cytometry. The BD acquisition softwares FACSSuiteTM and FACSDivaTM as well as the analyser LSRFortessa and FACSVerse and the sorter FACSARia will be introduced. Laboratory sessions in the afternoon will address sample preparation, instrument construction, operation and data acquisition. A basic knowledge of flow cytometry techniques is not required.

Lecturers
Annette Sommershof, Sandra Blaszkiewicz, Tim Schenkel, Ricarda Schwab

Course Area
SC

Participants
max. 12

Registration
via e-mail to flowkon@uni-konstanz.de

Principles for Toxicity Testing
12–13 April, 9:00–17:00 h

Toxicity testing of chemicals and drugs is essential for their market approval by authorities, such as the European Chemicals Agency (ECHA) or the US Food and Drug Administration (FDA). Moreover, in academic research, toxicity testing often forms the basis to elucidate the molecular mechanisms of cellular processes.

As a joint venture of the three Toxicology groups at University of Konstanz, this two-day course will provide an overview of state-of-the-art methods of toxicity testing. This will cover a concise introduction into the fundamentals of toxicology, in-vitro and in-vivo toxicity testing, and genetic toxicology. The programme will consist of lectures and interactive team work. This course will be interesting to doctoral students from all graduate schools at the Departments of Biology and Chemistry.

Lecturers
Aswin Mangerich, Alexander Bürkle, Daniel Dietrich, Robert Landsiedel, Marcel Leist, Hans-Joerg Martus, Stefan Schildknecht, Tanja Waldmann

Course Area
SC

Participants
max. 25

Registration
– chembiol.uni.kn/training/scientific-courses

In cooperation with
Konstanz-Brussels Joint Graduate Course: Research Integrity
29 May, European Commission, Brussels

What is research integrity and what is misconduct in research? Why has researchers’ misconduct (falsification, fabrication, plagiarism, etc.) become a public issue of late? What are the pressures that may lead scientists to practice misconduct? How could ethical assessments of research projects help ensure research integrity? What are the rules and procedures of ethical assessment of funding programmes, e.g. Horizon 2020?

This joint graduate course consists of two modules: The first module will take place in Konstanz and will give an introduction in the field of Research Integrity. The second part consist of a one-day field trip to the European Commission in Brussels. A prerequisite for the course is the successful participation in the e-learning module “Good Scientific Practice”.

Lecturers
Heike Brandstädter, Isidoros Karatzas et al., Anna Kusser

Course Area
SC

Participants
max. 30

Registration
– chembiol.uni.kn/training/scientific-courses/

The Power of Cutting Edge Mouse Genetics
05 July, 9:00 –17:00 h

In this one-day course the latest developments in the field of mouse genetics will be taught. The principles and theory of generating transgenic mice, knock out mice, or kick in mice will be covered. The generation of gene targeted mice with CRISPR/CAS9 and TALEN technology will be explained.

Practical examples from ongoing studies will be presented by external experts. Both constitutive and inducible approaches will be introduced and the power of mouse genetics for monitoring gene expression and visualising rare population of cells in mice will be outlined.

Lecturers
Marcus Groettrup, Hans-Jörg Fehling, Klaus-Peter Knobeloch, Ronald Naumann

Course Area
SC

Participants
max. 15

Registration
– chembiol.uni.kn/training/transferable-skills-management-courses
Bioimaging
16 – 18 July, 9:00 – 17:00 h

This three-day course will cover the following themes by lectures, demonstrations, and hands-on:

– Wide-field Fluorescence Imaging
– Laser Scan Confocal Microscopy
  (Point Scanning and Spinning Disk)
– Total-Internal-Reflection (TIRF) Microscopy
– Image Analysis

A basic knowledge of microscopy techniques is of advantage but not a prerequisite.

Lecturers
Elisa May, Martin Stöckl, Daniela Rothöhler

Course Area
SC

Participants
max. 9

Registration
– chembiol.uni.kn/training/scientific-courses/

In cooperation with

Data Science for Life Science
23 – 25 July, 10:00 – 17:00 h

This hands-on course will introduce classic and modern techniques for the analysis of various types of data: molecular databases, images, sequences, and mass spectrometry data. Analysis techniques range from standard logistic regression and random forests to deep neural networks. Participants will learn how to process and integrate their data using the open source platform KNIME and gain experience with extensions such as RDKit (cheminformatics), SeqAn (NGS), FIJI (images), and OpenMS (mass spec).

Greg Landum, the main author of RDKit, will cover the cheminformatics and machine learning part of the course. Further teachers are members of the SeqAn, FIJI, and OpenMS group.

Lecturers
Michael Berthold,
Alexander Fillbrunn,
Martin Horn,
Gregory Landrum,
Patrick Winter

Course Area
SC

Participants
max. 12

Registration
– chembiol.uni.kn/training/scientific-courses/

In cooperation with
**Scientific Presenting**
26 – 27 July, 9:00 – 17:00 h

Do you want to have more confidence and impact in your presentations? Do you want to relax and enjoy presenting your research in your team, in meetings and at conferences? This workshop uses a mix of practical exercises, discussion and video feedback to help you get your message across with confidence and clarity. The workshop is highly appreciated by doctoral students in the first phase of their studies.

- Assess your own presentation strengths and weaknesses
- Develop a critical awareness of effective presentation style to give and receive constructive feedback
- Build on and practice the English language of presentation
- Learn strategies for dealing with unexpected or difficult situations
- Design and use PowerPoint slides more effectively
- Develop confidence and enjoyment in public speaking

**Lecturer**
Millie Baker

**Course Area**
TM

**Participants**
max. 10

**Registration**
– chembiol.uni.kn/training/transferable-skills-management-courses/

**Intercultural Communication**
01 – 02 August, 9:00 – 17/18:00 h

You will present your results at international conferences? You are aiming at international networking with academic colleagues or industrial partners? This two-day practice- and applications-oriented workshop is designed to enable doctoral students to develop key skills in accurately identifying and dealing with typical scenarios in cross-cultural academic work interaction.

Drawing on authentic complex case studies, it provides a balance of conceptual frame-working and structure to create step-by-step diagnostic tools to define culture-appropriate strategies.

The workshop is highly recommended for both German and international students, preferably in the first phase of their doctoral studies.

**Lecturer**
Alexia Petersen

**Course Area**
TM

**Participants**
max. 12

**Registration**
– chembiol.uni.kn/training/transferable-skills-management-courses/
Data Visualisation
30 – 31 August, 9:00 – 17:00 h

This two-day workshop enables life scientists to effectively create figures based on quantitative data that add impact to their publications.

The workshop is divided into two one-day modules: “Principles” and “Applications”. On the first day, the “Principles” module focuses on understanding the purpose of a figure, choosing the most appropriate plot type, and the science of perception. This part is primarily concerned with the art of visual communication and integrates participants’ own examples into the teaching process.

On the second day, the “Applications” module focuses on the practical implementation of the data visualisation principles discussed. This is done using the R statistical programming environment with the participants’ own data.

Lecturer
Rick Scavetta

Course Area
TM

Participants
max. 12

Registration
– chembiol.uni-konstanz.de/training/transferable-skills-management-courses/

Project Management
(with GPM Certification)
12 – 13 & 25 – 26 September, 9:00 – 17:00 h plus GPM Certification (t.b.d.)

In companies with a developed project culture, knowledge and experience of project management methods is essential. This project management training makes you familiar with professional project management in research. It demonstrates how to run a scientific project in industry or a research institution, and shows the initial steps how to become project manager and project leader. After all, the training offers the possibility to get a certificate executed by the GPM (member of the International Project Management Association IPMA). The examination will follow approx. one week after the second part of the course.

The course is addressed mainly to doctoral students in the second half of their thesis who want to learn more about project management and/or who want to improve their application forms with an internationally recognised certificate.

Lecturer
Karen Dittmann

Course Area
TM

Participants
max. 15

Registration
– chembiol.uni.kn/training/transferable-skills-management-courses/
Proteomics
17–19 September, 9:00–17:00 h

This three-day course comprises morning lectures and hands-on experiences in the afternoon, hereby treating the following topics:

– General intro (proteomics workflow, mass spectrometers, ESI-/MALDI-ionisation, mass analyser)
– ESI-MS and MALDI-MS practice
– Sample preparation – theory and practice
– LC-MS and fragmentation techniques – theory and practice
– Special applications (SILAC, ICAT, protein quantification)

This course is addressed to doctoral students who want to learn basics and applications of mass spectrometry of proteins and protein mixtures.

Lecturer
Andreas Marquardt

Course Area
SC

Participants
max. 10

Registration
– chembiol.uni.kn/training/scientific-courses

Writing Research Articles in the Life Sciences and Natural Sciences
20–21 September, 9:00–17:00 h

The writing of well-argued and clearly-structured research articles is a key competence for doctoral students in the life sciences and natural sciences. In this workshop you will investigate the writing process from first ideas to finished text, explore your individual strengths and development areas in the context of scientific writing and analyse the section and paragraph structure of research articles.

Further, you will understand attributes of clear research articles, practice effective techniques for improvements of text quality, know how to improve the cooperation with co-authors and supervisors and develop time and self-management strategies for productive writing.

Lecturer
Philipp Mayer

Course Area
TM

Participants
max. 12

Registration
– chembiol.uni.kn/training/transferable-skills-management-courses
**Protein Folding**

09–11 October, 9:00–17:00 h

This three-day course provides theoretical and practical insights into protein folding. The sessions will cover the following topics:

- Protein folding problem
- Energy landscape theory
- Unfolding/refolding of proteins
- Chevron plot analysis
- Monitoring protein folding of a model protein directly in the lab
- Fluorescence stopped-flow spectroscopy
- Kinetic vs. equilibrium studies

The course is recommended to students with a doctoral project either in structural biology or biophysics, or an interest or cooperation intent in biophysical and/or kinetical research questions.

**Lecturer**

Michael Kovermann

**Course Area**

SC

**Participants**

max. 8

**Registration**

– [chembiol.uni.kn/training/scientific-courses](http://chembiol.uni.kn/training/scientific-courses)

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**Determination of Macromolecular Structures**

15–17 October, 9:00–17:00 h

This three-day course will provide theoretical and practical information on structure determination of biomolecules by X-ray crystallography and NMR spectroscopy. The sessions will cover the following topics:

- Diffraction theory
- Structure solution methods
- How to judge structural information
- Practical X-ray structure solution and model building
- NMR building blocks for data acquisition
- Structure calculation using NMR restraints

The course is recommended to students with a doctoral project either in structural biology or with an interest or cooperation intent in structural-biological research questions.

**Lecturers**

Kay Diederichs, Michael Kovermann

**Course Area**

SC

**Participants**

max. 15

**Registration**

– [chembiol.uni.kn/training/scientific-courses](http://chembiol.uni.kn/training/scientific-courses)
Frontiers in Bioimaging – Super Resolution and Light Sheet Microscopy
3 days, t.b.d., 9:00–17:00 h

This course will cover the principles of super resolution microscopy and light sheet microscopy. For the course we cooperate with luxendo (Heidelberg) and abberior instruments (Heidelberg). The application of these techniques in research, their strengths and prerequisites will be introduced. Introductory lectures for the different topics are followed by demonstration and hands-on sessions at the instruments. Also sample preparation is demonstrated. Hereby, students are welcome to bring along their own samples.

For course participation, basic knowledge of the principles of fluorescence microscopy (e.g. participation in one of the Bioimaging courses) is expected.

Lecturer
Martin Stöckl

Course Area
SC

Participants
max. 6

Registration
via e-mail to bioimaging@uni-konstanz.de

In cooperation with

MATLAB
Online

MATLAB is a high-level language and interactive environment for numerical computation, visualisation, and programming. Using MATLAB, you can analyse data, develop algorithms, and create models and applications. Three “self-paced” online courses are available that cover the topics to the same extent than an on-site training:

– Basics
– Programming
– Data Processing and Visualisation

Dates
Anytime

Registration
via e-mail to chembiol@uni-konstanz.de

Please note
Since there will be no course confirmation, the online course cannot be considered as equal to courses of the KoRS-CB course programme.
Good Scientific Practice

Online

How should research results be documented? What is the right way to cite? How to handle with image sources? This online course has been designed to give an introduction on questions of good scientific practice including how to wisely plan and organise the research project and which legal aspects, such as in labour law or copyright law, are relevant for doctoral students.

Five modules are available containing comprehensive information, including tests to check the knowledge gained as well as supplementary information material. The final module provides a certificate.

Dates
Anytime

Registration
via e-mail to chembiol@uni-konstanz.de
(to obtain your licence key)

Please note
This course is obligatory for new KoRS-CB fellows within the first six months of the thesis. You will receive your licence key unasked within the first weeks.

Further Workshops

Workshops with Markus Treger
– chembiol.uni.kn/training/transferable-skills-management-courses
– Studienkostenseminar für Promovierende
  19 February, 16:00 – 18:00 h, max. 15 participants
– Gehaltsverhandlung – Vorkommastellen Optimierung
  27 February, 15:00 – 18:00 h, max. 12 participants
– Professionelles Bewerben für NaturwissenschaftlerInnen
  21 March, 15:00 – 18:00 h, max. 12 participants

Please note: These workshops cannot be considered as equal to courses of the KoRS-CB course programme.
Further Training Offers

Academic Staff Development

– uni.kn/asd
Terms & Conditions: The graduate schools GBS, GCh, KoRS-CB reimburse the fee for its doctoral students. Please communicate during the registration which graduate school you belong to.

Career Service

– uni.kn/studieren/beratung-und-service/career-service
Terms & Conditions: The graduate schools will reimburse fees individually upon request.

Research Support Office

– uni.kn/forschungssupport

Hochschul Didaktik Zentrum Universitäten Baden-Württemberg

– uni.kn/asd/angebote/hochschuldidaktik

MuT – Mentoring und Training

– chembiol.uni.kn/training/mentoring-training

– chembiol.uni.kn
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