Module Handbook

TUK MODHB Homepage

Course BIO-BIO-04-K-5

Modern Methods in Biology (TM5a) (2V, 3.0 LP)

Course Type

SWS	Type	Course Form	CP (Effort)	Presence-Time / Self-Study	
2	V	Lecture	3.0 CP	28 h	62 h
(2V)			3.0 CP	28 h	62 h

Basedata

SWS	2**V**
CP, Effort	3.0 CP = 90 h
Position of the semester	1 Sem. in WiSe
Level	[5] Master (Entry Level)
Language	[EN] English
Lecturers	Filker, Sabine, Jun. Prof. Dr. (PROF | DEPT: BIO) Frankenberg-Dinkel, Nicole, Prof. Dr. (PROF | DEPT: BIO) Friauf, Eckhard, Prof. Dr. (PROF | DEPT: BIO) Hahn, Matthias, Prof. Dr. (PROF | DEPT: BIO) Kins, Stefan, Prof. Dr. (PROF | DEPT: BIO) Mühlhaus, Timo, Jun. Prof. Dr. (PROF | DEPT: BIO) Müller-Schüssele, Stefanie, Prof. Dr. (PROF | DEPT: BIO) Stoeck, Thorsten, Prof. Dr. (PROF | DEPT: BIO) Storchova, Zuzana, Prof. Dr. (PROF | DEPT: BIO) Willmund, Felix, Jun. Prof. Dr. (PROF | DEPT: BIO) Erkel, Gerhard, Dr. habil. (WMA | DEPT: BIO) Gehringer, Michelle, Dr. (WMA | DEPT: BIO) Sommer, Frederik, Dr. (WMA | DEPT: BIO)
Area of study	[BIO-BIO] Biology (generic)
Livecycle-State	[NORM] Active

Possible Study achievement

- Verification of study performance: **continuous and active participation in the courses**
- Details of the examination (type, duration, criteria) will be announced at the beginning of the course.

Contents

− This team-taught lecture provides an overview of a range of up-to-date methods that are currently used in the groups that are involved in the Master program.

− Each of the methods are presented by expert teachers (research assistants, junior professors and professors) who have worked with them in their groups. After introduction into the theoretical background and the principle of the methods, the teachers describe their implementation, enabling the students to use them in their future practicals and research work.

− The lecture also increases the capability of the students to connect research topics with the appropriate methodological approaches, and deepen their problem-solving scientific abilities.

Current Topics:

− Smart PCR applications, new sequencing technologies

− Synthetic (micro)biology

− Gene expression and promoter analysis

− Deciphering bacterial gene function and gene regulation

− Knock-out, knock-down mutagenesis in mice and animals

− Proteomics workflow

− Analysis of protein function

− Heterologous protein expression systems: E. coli, yeast and Xenopus oocytes

− Enzyme and metabolite analyses

− Immunochemical methods

− Protein-protein interactions

− Biophysical methods for protein analysis

− Scanning electron microscopy

− Fluorescent in situ hybridization

Literature

Provided by the teachers on their websites

Materials

Provided by the teachers on their websites

Requirements for attendance (informal)

None

Requirements for attendance (formal)

None

References to Course [BIO-BIO-04-K-5]

Module	Name	Context	
[BIO-TM5-M-5]	Theoriemodul 5: Theorie - Lecture ‚Modern Methods in Biology'	P: Obligatory	2V, 3.0 LP