

KITE Award

**Nominierte Projekte 2018**





Der KITE Award will alle engagierten Lehrpersonen der ETH Zürich und ihre exzellenten Lehrveranstaltungen würdigen. Die Ausbildung der Studierenden ist die wichtigste Aufgabe unserer Hochschule und die Weiterentwicklung der Lehre ist eine Priorität für den gesamten Lehrkörper. Mit dem KITE Award will die KdL gute Beispiele neuartiger Ansätze in der Lehre aufzeigen: Innovation, Wirksamkeit und Nachhaltigkeit sind die Kriterien an denen sich die Auswahl orientiert. Alle nominierten Lehrprojekte des Kite Awards 2018 sind hier in zufälliger Reihenfolge kurz beschrieben. Lassen Sie sich von den originellen Ideen und den wirkungsvollen Lehrkonzepten inspirieren! Wenn Sie mehr darüber erfahren möchten, kontaktieren Sie bitte die Projektverantwortlichen, die Ihnen gerne ihre Erfahrungen schildern werden.

Prof. Dr. Edoardo Mazza, Präsident KdL

# Practical Methods in Tissue Engineering

Prof. Dr. Karin Wuertz-Kozak



Prof. Dr. Marcy Zenobi-Wong



Dr. Olga Krupkova



“Practical Methods in Tissue Engineering” is a hands-on, research-oriented laboratory course that employs state-of-the-art experiments/equipment. Aside from incorporating authentic tasks and encouraging cooperative learning, the course also uses a digital learning environment, multimedia resources and innovative teaching tools to provide students with the skills to analyze and critically evaluate their data, compare it with the literature and summarize it in a scientifically correct form.

# digital. interactive. aligned. – with eSkript & moodle



PD Dr. Silvio Lorenzetti



Sarah Frédéricks

digital. interactive. aligned. – with eSkript & moodle  
Fed up with the limitations of paper and files (PDF, DOC,...), the lecture material and exams were digitalized and put online to enable rich media (video, simulations,...), interactivity, collaboration and web annotation. Students are now challenged and activated at times when they used to just passively read. All these changes are the cornerstone for all the new possibilities to come.


# IDEA League Joint Master Programme in Applied Geophysics




Prof. Dr. Hansruedi Maurer



Dr. Cédric Schmelzbach



Prof. Dr. Johan Robertsson



Prof. Dr. Alan Green

The Joint Master Programme in Applied Geophysics is a concerted effort of the IDEA League partners TU Delft, ETH Zurich and RWTH Aachen. It combines unique profiles and strenghts from three universities in a single program, and is now an internationally well-recognized programme. Besides offering an innovative curriculum, it promotes student mobility, and the immersion in a student group with a large cultural diversity enables the students to acquire important soft skills.

# Flipped-classroom construction practicals: How randomized groups enhance student participation



PD Dr. Marcel Frehner

My combined lecture/exercises runs in three rooms in parallel preventing frontal teaching. Hence, I turned it into a flipped classroom. For the lectures, I produce weekly online video tutorials. The students prepare this material prior to the contact hours together with a series of basic exercises. Every week, I create small randomized groups, where students discuss their preparatory homework. This situation imposes some social pressure, which enforces student preparation and participation.

# Learning by doing and teaching/Chemical Aspects of Bioimaging



Prof. Dr. Pablo Rivera-Fuentes

In this course, students learn to design efficient fluorescence bioimaging experiments. To achieve this objective, a combination of teaching methods was implemented, including regular lectures, case studies, analysis of recent papers, and design of experiments for “real-world” problems. Constant work in small teams and ungraded weekly quizzes proved to be efficient ways to help students learn by themselves and manage large amounts of multidisciplinary information throughout the course.



# Philosophische Betrachtungen zur Physik II



Prof. Dr. Michael Hampe



PD Dr. Norman Sieroka



Prof. Dr. Rainer Wallny

In this course students critically evaluate topics and approaches from physics against a broader historical and philosophical/systematic background. The course accompanies the lecture course “Physics II” and flipped classroom teaching is applied. During plenary sessions and tutorials students discuss, scrutinize, and consolidate their background beliefs regarding, for instance, theory formation and experimental practices, but also regarding fundamental concepts such as matter and causation.

# 360° – Reality to Virtuality

Prof. Karin Sander



Jonathan Banz



Prof. Dr. Andreas Wieser



Ephraim Friedli



In dieser Lehrveranstaltung setzen sich die Studierenden in interdisziplinären Teams mit Digitalisierung und 3D-Modellierung auseinander. Sie erwerben Grundkenntnisse zu Sensorik und Methodik für die Erfassung, Verarbeitung und Nutzung von 3D-Daten. Sie definieren ein Projekt mit technischen und gestalterischen Zielen und vertiefen die Kenntnisse im Zuge der Umsetzung selbständig. Über Zwischenkritiken und Präsentationen sowie einen Blog tauschen sie Wissen und Erfahrungen untereinander aus

# Coffee Lectures – ein neues Format und Curriculum zur Vermittlung von Digital Literacy



Dr. Oliver Renn

In der Wissensgesellschaft ist nicht nur Fachwissen wichtig, sondern auch Wissen darüber, wie man Informationen findet, nutzt und teilt. Am Informationszentrum Chemie | Biologie | Pharmazie wurde deshalb ein Curriculum für Digital Literacy entwickelt und ein neues Format, um diese Kompetenzen zu vermitteln – die Coffee Lectures. Wie nachhaltig und erfolgreich dieses neue Lehr- und Lernformat ist, zeigt sich daran, dass mittlerweile fast 40 Universitäten dieses Format übernommen haben.

# Virtual Tissue Engineering Lab

Dr. Edmondo Benetti



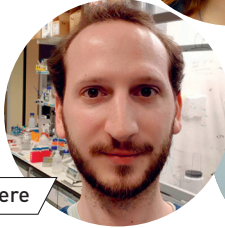
Prof. Dr. Marcy Zenobi-Wong



Giulia Morgese



Nicolas Broguiere



Michael Müller



A Virtual Tissue Engineering Lab was created so that large classes could experience a realistic lab environment and participate in selecting, making and analysing scaffolds used in tissue engineering. The gamification of the course material provides an engaging, highly interactive learning environment which reinforces theory and gives a headstart for wet lab experimentation.

# E.Tutorials – A new Approach to Lecture Design for individualized learning



Dr. Markus Dahinden



David Sichau



Dr. Lukas Fässler

Die E.Tutorial-Lernumgebung setzt neue Maßstäbe für die Individualisierung des Informatikunterrichts auf der Basis von realen wissenschaftlichen Daten aus den Fächern der Studierenden. Mit dem integrierten Übungsmanagementsystem PELE können Eins-zu-eins-Projektpräsentationen mit einem Lerncoach, individuellem Feedback und gegenseitiger Bewertung auch in grossen Lehrveranstaltungen mit mehreren hundert Studierenden, knappem Raumangebot und divergierendem Vorwissen durchgeführt werden.

# A D-ITET flipped classroom experiment / Signals and Systems II



Prof. Dr. John Lygeros

Signals and Systems II, a large 4<sup>th</sup> semester class, has for several years be taught in a flipped classroom format. Making use of videos and other electronic means to help the students prepare for the lectures and exercise classes, frees up precious time during the face-to-face interaction with the lecturer and assistants. This enables getting into more in-depth discussions of the topics covered in the class and engaging the students through interactive tools such as clicker questions.

# nemesis – new electronic-multimedia evaluation-testing systems



Prof. Dr. Norbert Hungerbühler



Dr. Alexander Caspar



Heinz Rasched

Um das Niveau und die Betreuung in den Mathematikübungen bei stark wachsenden Studierendenzahlen zu sichern, hat das D-MATH mit nemesis neue Modelle und Dienste an der ETHZ etabliert: In Service-Vorlesungen wurden Ressourcen halbiert mit Online-Aufgaben für Formatives Assessment als fester Teil des Curriculums. ETHZ-weit sind die Dienste für Administration und Assessment im Einsatz: am D-MAVT, D-INFK, D-BIOL, D-CHAB; bei den Akademischen Diensten: Aufnahmeprüfung, Studienberatung, LBA.

# Biological Chemistry B: New Enzymes from Directed Evolution Experiments



Prof. Dr. Peter Kast

This highly intense and ambitious course teaches molecular evolutionary methods and principles of biological chemistry. Several teams of two students create and characterize individual enzyme variants for a specifically designed research project, addressing a fresh set of questions every year. Thus, neither the students nor the mentoring team (and the lecturer) know the outcome at the onset of the course, which integrates theory with hands-on learning and state-of-the-art publishable research.



# The Center for Active Learning: Designing an interactive biology curriculum



Prof. Dr. Ernst Hafen



Dr. Ulrich Genick



Dr. Katja Köhler



Jennifer Schmitz


At the Center for Active Learning (CAL), PhD biologists and student assistants support lecturers to restructure courses, develop teaching material, design and execute group activities, and conduct learning analytics. CAL has transformed various courses into interactive teaching modules that are attended by 1000 students per year. These courses provide students with opportunities to apply their knowledge, develop scientific literacy and critical thinking skills, and assess their learning gain.

# CuView software: teaching transmission electron microscopy



CuView is an educational software package for teaching Transmission Electron Microscopy (TEM) and is integrated into ETH electron microscopy courses. Available as a website, it has a user-friendly interface and offers virtual TEM and simulation tools. CuView guides the student through various steps to simulate a TEM image or diffraction pattern, and follows up with quizzes and hints on parameter choice. CuView's innovative software design makes it a tool of choice for anyone starting off with TEM.

# Industry and Competitive Analysis

A circular portrait of Dr. Vivianna Fang He, a woman with long dark hair, looking slightly to the right.

Dr. Vivianna Fang He

A circular portrait of Christian Wedl, a man with dark hair, wearing a blue and white striped shirt and a dark jacket, looking directly at the camera.

Christian Wedl

Industry and competitive analysis (ICA) is a pioneer course of the next generation business education. This course innovatively combines lectures, live cases, and fieldwork in one semester. It spans the boundary of university by bringing the boardroom to the classroom and prepares ETH students to solve complex and dynamic real-world problems facing local and global businesses.

# Corporate Sustainability



Prof. Dr. Volker Hoffmann



Dr. Erik Jentges

Course Design: Dr. Julian Kölbel, Dr. Erik Jentges, Dr. Jörn Hoppmann  
Lecturing Team: Dr. Johannes Meuer, Dr. Bastien Girod, Dr. Christof Knoeri,  
MSc Marius Schwarz, Dr. Annegret Stephan, MSc Valeria Superti, Dr. Ann-Kristin Zobel  
Video Productions: MSc Alejandro Núñez-Jiménez, MSc Daniela Seiler

Students become advocates for sustainability in firms by learning about four key topics: assessment, strategy, technology, and finance. In the first half of the semester, lectures are complemented by interactive videos and e-modules to train critical thinking skills. In the second half, students develop their skills in one of four tracks and work in teams to prepare mock debates, consulting strategies, economic models, and campaign videos, which are presented in a concluding group puzzle session.

# Design-Thinking Process embedded in ETH Week ETH Week 2017: Manufacturing the Future



Prof. Dr. Stefano Brusoni



Dr. Alan Cabello Llamas



Linda Armbruster

ETH Week addresses major societal challenges and fosters critical thinking and creativity. Together with experts, students can discuss, frame and solve relevant problems in order to define and tackle real-world challenges in interdisciplinary teams. The program is designed following a Design Thinking approach that allows students to learn how its hands-on tools and agile mind-set can ultimately generate solutions that are not only technical but based on real human needs, creating value for both the final user and society as a whole.

# Power and Leadership



Prof. Dr. Petra Schmid

Petra Schmid offered a course on power and leadership at the Department of Management, Technology, and Economics (D-MTEC). Emphasis was placed on self-development, applications of knowledge to real-life situations, and leadership ethics. As part of this course, students learned what effective and ethical leadership means and reflected upon their own leadership potential. Students also trained their own leadership skills and received peer feedback.

# OMLETH – Ortsbezogenes mobiles Lernen an der ETH GI Ssmox – GIS supported mobile outdoor experiments Ha



OMLETH und GISsmox ermöglichen innovatives mobiles Lernen am Beispiel Architektur und Systemorientierte Naturwissenschaften. In OMLETH wurde eine kartenbasierte Plattform für standortbasierte Lerninhalte entwickelt, GISsmox unterstützt crowd-sampling mit einer Standard-Smartphone-App. Die beiden lernerzentrierten Unterrichtsformen verwenden adaptierte, GPS-basierte Kartenanwendungen. Evaluationen zeigen, dass kognitive Lernziele, Motivation und Interesse für das Lernthema gefördert werden.

# Foundations of Ecosystem Management



Ecosystem management concerns finding landscape-scale solutions to the multiple environmental demands of society. The course addresses the theoretical foundations of ecosystem management. Analysing real case studies the students develop conceptual models enriched by direct and indirect engagement with stakeholders. Interactive games are constructed to explore alternative solution scenarios. Students gain skills in analysing socio-ecological systems and conducting prospective analyses.



# Enabling Entrepreneurship: From Science to Startup



Anil Sethi

The course demystifies entrepreneurship by providing small & quantifiable steps that students can take to transition their technology into a startup. Since the focus is on students' ideas, rather than theory, the students take complete ownership. Exposure to investors & entrepreneurs provide relevance in the real world. Knowledge is retained if linked to future relevance. Their ongoing learning helps them to concretize ideas in a practical & methodical manner as they step into entrepreneurship.

# Entrepreneurial Leadership Seminar (ELS)



The Entrepreneurial Leadership Seminar provides students with the opportunity of working on a real case on strategy, innovation and leadership in close collaboration with the top management of leading Swiss technology companies. The seminar fosters integrative, critical-thinking and self-driven reflective learning in diverse teams. Several D-MTEC Chairs collaborate to coach the teams and support the students' learning journey with their research expertise.

# Innovation, Creativity and Personality Traits



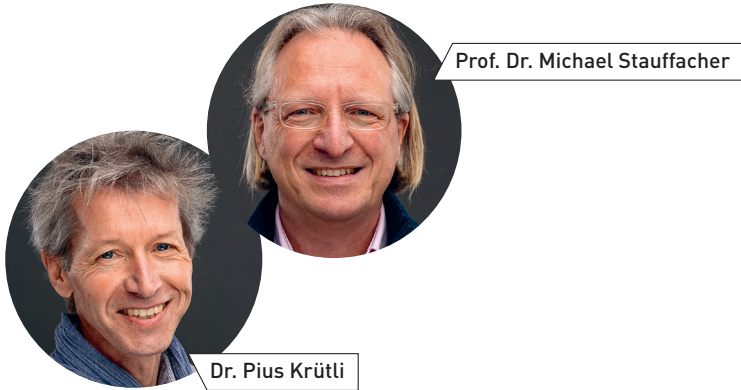
Dr. Daniella Laureiro-Martinez



Prof. Dr. Stefano Brusoni

Innovation requires to creatively generate options and implement a coherent action plan. Few people are good at both. This course aims at improving our Weiterbildung students' options generation and implementation. Students receive a customized assessment of their cognitive abilities and personality. They use the assessment to design and implement strategies fitted to their own strengths. These strategies creatively innovate their own working habits and lead change in their organizations.

# Transdisciplinary Case Study – Intercultural Learning in the Global South



The transdisciplinary case study is a research-oriented, project-based learning program for MSc students offered by the USYS TdLab. Students work on real-world problems and interact with actors from society. In 2016, the course was organized in the Seychelles. After a full semester of preparatory work, ETH students teamed up with students from UniSey in the field phase for three full weeks. Results were shared locally through oral presentations, a book publication and a newspaper supplement.

# Biodiversitätsexkursionen



Prof. Dr. Jukka Jokela



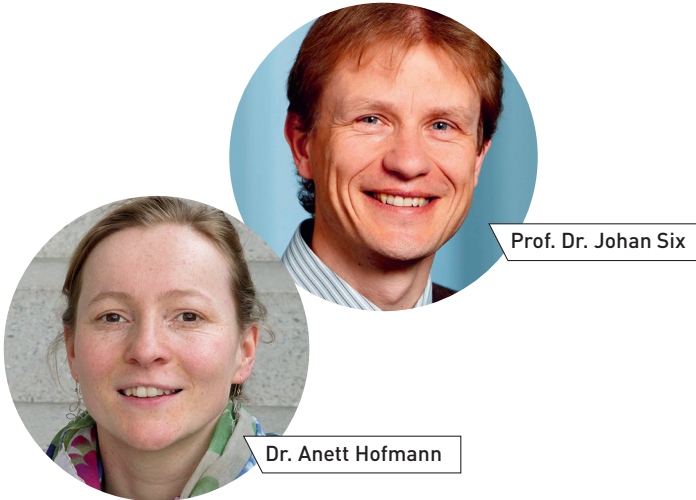
Andrea Funk



Dr. Urs Brändle

Auf sechs Exkursionen erfassen die UMNW-Studierenden nach einer Vorbereitung mit Videos und einem Abschlusstest das Vorkommen von jeweils ca. 15 Arten einer Organismengruppe im Exkursionsgebiet mit dem GIS-App ihres Mobilgerätes. Diese Daten werden in der Nachbereitung analysiert und interpretiert. Die Studierenden übernehmen Verantwortung für ihr eigenes Lernen, schärfen ihre Wahrnehmung der belebten Natur, erfahren zeitgemässe Erfassungsmethoden und werten eigene Datensätze aus.

# Sustainable Agroecosystems



The “Complex vegetable systems challenge” is an integral part of the bachelor level lecture “Sustainable Agroecosystems I”. Students work in small teams to design and implement vertical gardens on plots of four square meters. The learning environment is a greenhouse close to the ETH main building. Students practice system’s thinking and take self-responsibility for their plots and group work dynamics. Failure, e.g. yield loss, is allowed and seen as a promoter of learning.



## **Kontakt**

ETH Zürich

Julia Kehl, Projektleitung KITE Award

Telefon +41 44 632 21 51

[julia.kehl@let.ethz.ch](mailto:julia.kehl@let.ethz.ch)

[www.ethz.ch/kite](http://www.ethz.ch/kite)

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