TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Welcome Introduction

Prof. Dr. Bjoern Andres – Program Coordinator

Dresden, 2024-04-10

Agenda

1. Welcome and opening remarks (Prof. Dr. Andres)
2. TU Dresden and the faculties involved (Prof. Dr. Andres)
3. Tracks of the study program (6 CMS Track Coordinators)
4. Personal mentoring system (Prof. Dr. Andres)
5. Curricular module system (Prof. Dr. Andres)
6. Fast-track to PhD option, PhD programs (Prof. Dr. Andres)
7. Language Centre / Sprachzentrum (Prof. Dr. Andres)
8. Examination Office (Ms Kruse)
9. Complaints Office (Prof. Dr. Andres)
10. Core Values and Guiding Principles (Prof. Dr. Andres)
11. Student Representatives -iFSR (Mr Baitis)

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Welcome and Opening Remarks

Welcome

City of Dresden

- >500.000 inhabitants
- >200 bars and clubs in Neustadt alone
- Baroque old town
- Semper Opera
- Symphony hall
- 10 theaters
- 50 museums
- Botanical gardens
- Vibrant art scene
- Dozens of festivals throughout the year
- 1.5 hrs from Prague or Berlin

Surroundings of Dresden

- National park „Sächsische Schweiz“
- Local recreational area „Dresdner Heide“
- Nature reserve „Königsbrücker Heide“
- Many more parks, castles, etc.

Science in Dresden

- 3 Max Planck Institutes
- 11 Fraunhofer Institutes
- 4 Leibniz Institutes
- 2 Helmholtz Centers
- TU Dresden (32’000 students, 126 programs, super-computer, library with >9M volumes)
- HTW Dresden
- School of Arts
- High-tech companies, including Global Foundries, Bosch, Siemens, Infineon, SAP and Zeiss

Computational Modeling and Simulation: Class of 2024

- 766 applications (source: CMS Admin)
- 270 students admitted (source: CMS Admin)
- 124 students enrolled (on 30 September)

TECHNISCHE UNIVERSITÄT DRESDEN

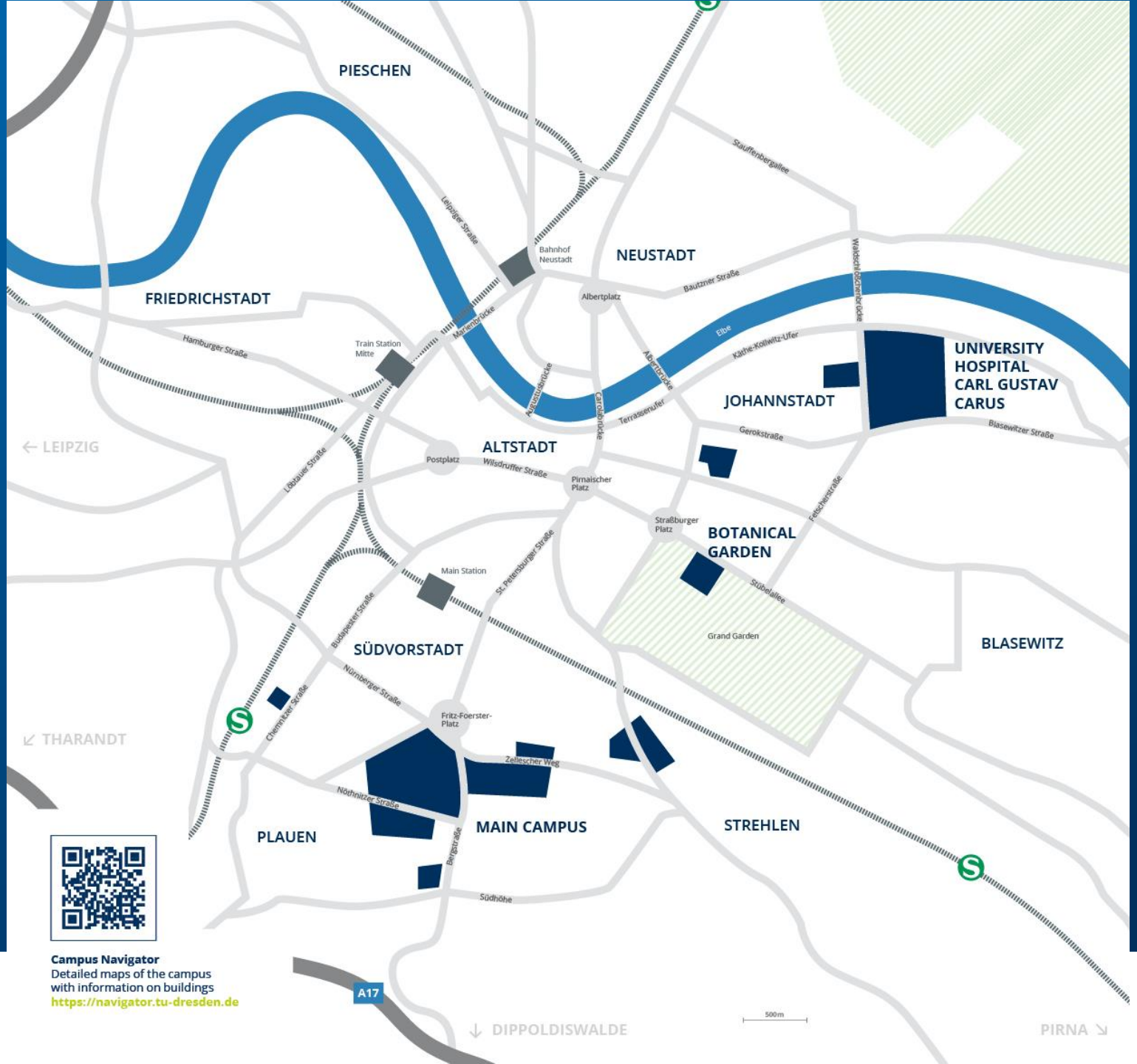
DRESDEN concept

Computational Modeling and Simulation

TU Dresden and the Faculties involved

TU Dresden, estd. 1828

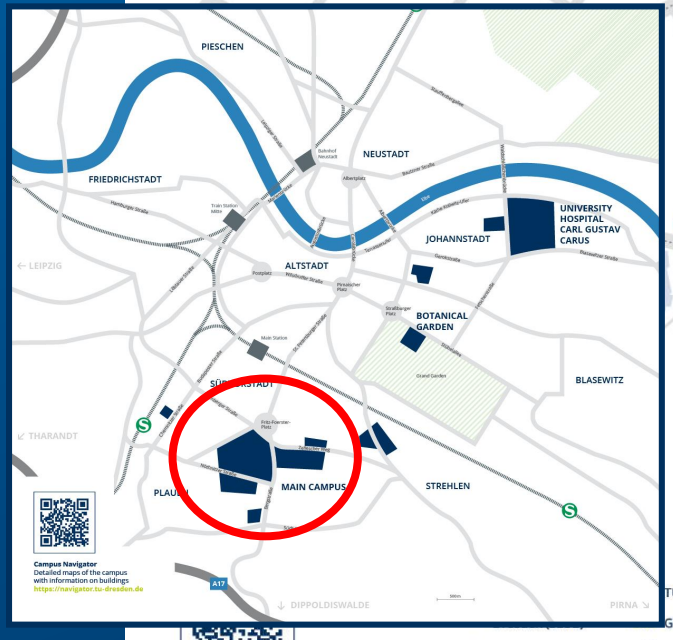
Campus



Campus Navigator
Detailed maps of the campus
with information on buildings
https://navigator.tu-dresden.de

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

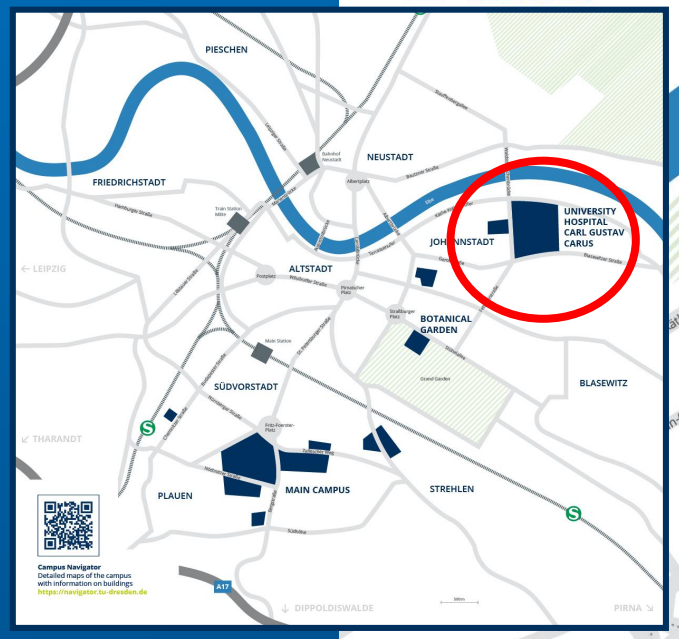


Campus Navigator
Detailed maps with information on buildings, room occupancy schedules, secondary campuses and much more
https://navigator.tu-dresden.de

- TUD Information
- Green seminar room
- Canteen
- Café
- Grill Cube
- Sports facility
- Bike service station
- Book exchange
- Highway TU Health
- Playground
- Table tennis
- Student club
- Bus and tram stops

Main campus

APB	Andreas-Pfitzmann-Bau
ABS	August-Bebel-Str., Lecture theatre
ASB	Andreas-Schubert-Bau, PIZ Patent-Information Centre, ASB Container lab
B69	Bergstraße 69
BAR	Barkhausen-Bau
BER	Berndt-Bau
BEY	Beyer-Bau
BIN	Binder-Bau
BIO	Biology
BSS	Office building Strehlener Straße: Central Student Information and Counselling Service, Admissions Office, International Office, Career Service; Directorates: Budget and Purchases, Personnel, Central Affairs, Planning and Organisation, Student Affairs and Continuing Education
BZW	Office building Zellescher Weg
CHE	Chemistry/Hydrosciences
DRU	Drude-Bau
E03	Ludwig-Ermold-Str. 3
FAL	Falkenbrunnen
FOE	Fritz-Foerster-Bau
FRE	Walter-Frenzel-Bau (Testing hall)
FVZ	Vehicle Testing Centre
GER	von-Gerber-Bau
GLB	Günther-Landgraf-Bau
GÖR	Görges-Bau with Altana Gallery
HAL	Hallwachsstr. 3
HEI	Heidebroek-Bau (Virtual Centre)
HEM	Walther-Hempel-Bau
HÜL	Hülße-Bau
HSZ	Auditorium Centre
JAN	Jante-Bau
KÖN	König-Bau
KRO	Hermann-Krone-Bau
KUT	Kutzbach-Bau
M05	Administration building
M07	Graduate Academy
M13	Alte Mensa, Ballroom Dülferstraße
MER	Merkel-Bau
MIE	Mierdel-Bau
MOH	Mohr-Bau (Testing hall)
MOL	Mollier-Bau
MÜL	Müller-Bau
N60	Sports complex
NEU	Neuffer-Bau
NÜR	LEONARDO-BÜRO SACHSEN, WELCOME-CENTER
PAU	Walther-Pauer-Bau
POT	Gerhart-Potthoff-Bau
REC	Recknagel-Bau
REK	Rectorat's building
S7A	Institute building
SAC	Sachsenberg-Bau
SCH	Georg-Schumann-Bau
SE1	Seminar building 1
SE2	Seminar building 2
SEM	Construction materials lab
STA	Stadtgutstr. 10
TEX	Textile machine hall
TIL	Tillich-Bau
TOE	Toepler-Bau
TLZ	Control Centre
TRE	Trefftz-Bau
VG1	Administration building 1, Campus office "Uni with child"
VG2	Student Council, tuuwi, Haus der Jugend
VG3	Administration building 3
VMB	von-Mises-Bau
VVT	VVT Hall
W07	Administration building
W48	Wiener Str. 48
WEB	Weberplatz 5, Theatre "die bühne"
WHB	Werner-Hartmann-Bau
WIL	Willers-Bau
Z21	Zellescher Weg 21
Z41	CIPSEM
ZEU	Zeuner-Bau
ZIN	Centre for Integrated Natural Materials Technology



Elbe
Käthe-Kollwitz-Ufer
Thomas-Müntzer-Platz
Pfotenhauerstraße
Goetheallee
Max Planck Institute CBG
Arnoldstraße
Hertelstraße
Neuberstraße
Fetscherstraße
Schubertstraße
Händelallee
Blasewitzer Waldpark
BCU
BIZ
CRT
Tatzberg
Baufeld NCT
Böhnischplatz
Elsässer Straße
Ziegelstraße
Güntzplatz
Gerokstraße
Trinitatisplatz
Fiedlerstraße
Mildred-Scheel-Str.
Königsheim-platz
Augsburger Straße
Blasewitzer Straße
Canteen Johannstadt
Hall of Residence
Mensologie
Dürerstraße
Zöllnerstraße
Güntzstraße
Marschnerstraße
Hans-Grundig-Straße
Holbeinstraße
Club Count Down
Striesener Straße
Wittenberger Straße
Krenkelstraße
Wartburgstraße
Wormser Straße
Canalettostraße
Fetscher-platz
Borsbergstraße
DÜR
LIZ
MAR
WIK
PEZ
F29

Campus Johannstadt with University Hospital

A18	Arnoldstr. 18, ZIK B CUBE	**F29**	Fetscherforum, Fetscherstr. 29	**0 – 130**	Buildings of the University Hospital are detailed in the digital Carus Navigator.
BCU	New building ZIK B CUBE	**LIZ**	Leichtbau-Innovationszentrum		
BIZ	Biotechnology Center TUD – BIOTEC	**MAR**	Building for research and teaching, Dürerstr. 30; Marschnerstr. 30, 32		
CRT	Center of Regenerative Therapies Dresden – CRTD	**PEZ**	Process Development Center		
DÜR	Building for research and teaching, Dürerstr. 24 and Marschnerstr. 39	**WIK**	Wind tunnel		

Canteen
Café
UKD Information
Student club
Bus and tram stops

Campus Navigator
Detailed maps with information on buildings, room occupancy schedules, secondary campuses and much more
https://navigator.tu-dresden.de

Carus Navigator
Detailed maps with information on buildings of the University Hospital
ukd-navigator.de

TECHNISCHE UNIVERSITÄT DRESDEN

TU Dresden in the Rankings

- QS, THE rank: <200 (CS < 100)
- DFG ranking: 6 (CS: 1)

Excellence University since 2012

1st round

CRTD
Center for Regenerative Therapies Dresden

DIGS-BB

2nd round

cfaed
CENTER FOR ADVANCING ELECTRONICS DRESDEN

PHYSICS OF LIFE

3rd round

ct.qmat

CeTI
Centre for Tactile Internet with Human-in-the-Loop

Dresden Concept: 12,500 scientists

Local Research Centers in CMS

HZDR

ZIH
Zentrum für Informationsdiens
und Hochleistungsrechnen

DLR
Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center

center for
systems biology
dresden

ScaDS
DRESDEN LEIPZIG

PHYSICS
OF LIFE

CASUS
CENTER FOR ADVANCED
SYSTEMS UNDERSTANDING

5G LAB
GERMANY

DCMS
Dresden Center
Computational Materials
Science

cfaed
CENTER FOR
ADVANCING
ELECTRONICS
DRESDEN

CeTI
Centre for Tactile Internet
with Human-in-the-Loop

Faculty of Computer Science

Institutes and Chairs

- Institute of Applied Computer Science
- Institute of Artificial Intelligence
- Institute of Software and Multimedia Technology
- Institute of Systems Architecture
- Institute of Computer Engineering
- Institute of Theoretical Computer Science

- Center for Systems Biology

Coordinating faculty
Examination Office
Track “Visual Computing”
Track “Computational Life Science”
Track “Logical Modeling”


Faculty of Mathematics

Institutes and Chairs

- Institute of Algebra
- Institute of Analysis
- Institute of Geometry
- Institute of Mathematical Stochastics
- Institute of Numerical Mathematics
- Institute of Scientific Computing

- Center for Dynamics

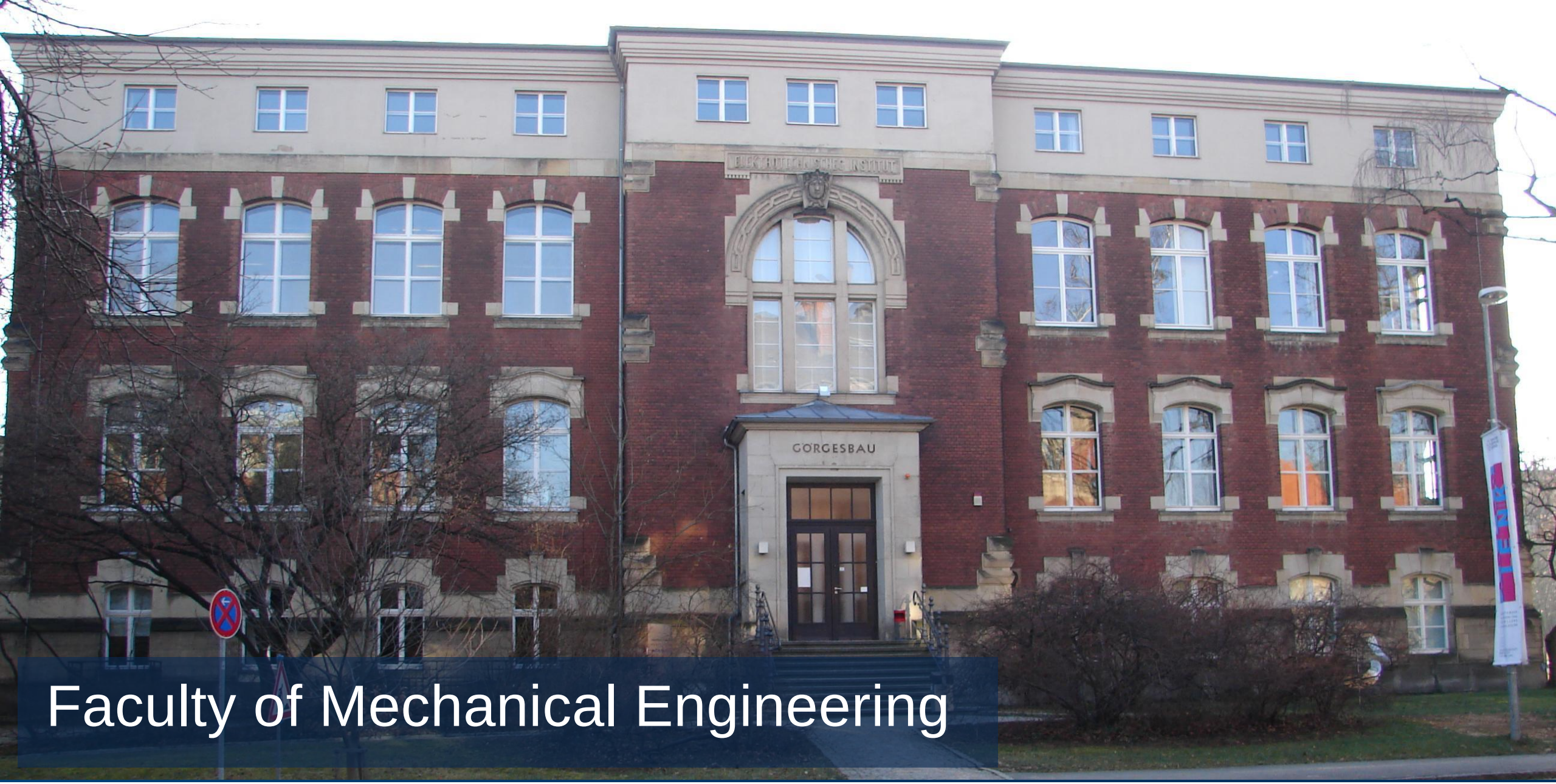
Curricular Planning Office
Track “Computational Mathematics”


Center for Molecular and Cellular Bioengineering

Institutes and Chairs

- Biotechnology Center BIOTEC
- Center for Regenerative Therapies CRTD
- Center for Molecular Bioengineering B-CUBE

Lectures in
“Computational Life Science”



Faculty of Mechanical Engineering

Institutes

- Institute of Aerospace Engineering
- Institute of Fluid Mechanics
- Institute of Lightweight Engineering and Polymer Technology
- Institute of Machine Elements and Machine Design
- Institute of Manufacturing Science and Engineering
- Institute of Material Handling and Industrial Engineering
- Institute of Materials Science
- Institute of Mechatronic Engineering
- Institute of Natural Materials Technology
- Institute of Power Engineering
- Institute of Process Engineering and Environmental Technology
- Institute of Solid Mechanics
- Institute of Textile Machinery and High-Performance Material Technology

Track “Computational Engineering”


Faculty of Business and Economics

Chairs

- Auditing and Taxation
- Business Education and Management Training
- Energy Economics
- Entrepreneurship and Innovation
- Environmental Management
- Finance and Financial Services
- Management Accounting and Control
- Industrial Management
- Logistics
- Marketing
- Organization
- Strategic Management
- Knowledge and Technology Transfer

Track “Computational Modeling in Energy Economics”

Faculty of Medicine

Institutes and Chairs

- Institute of Anatomy
- Institute of History of Medicine
- Institute of Immunology
- Institute of Clinical Genetics
- Institute of Clinical Pharmacology
- Institute of Medical Informatics and Biometry
- Institute of Medical Microbiology and Hygiene
- Institute of Pharmacology and Toxicology
- Institute of Physiology
- Institute of Physiological Chemistry
- Institute of Pathology
- Institute of Virology
- Institute of Occupational and Social Medicine

Lectures in “Computational Life Science”

Faculty of Psychology

Institutes and Chairs

- Institute of General Psychology, Biopsychology, and Methods of Psychology
- Institute of Clinical Psychology and Psychotherapy
- Institute of Labor, Organizational, and Social Psychology
- Institute of Developmental Psychology and Pedagogics

- Chair of Transportation Psychology

Lectures in
“Computational Life Science”

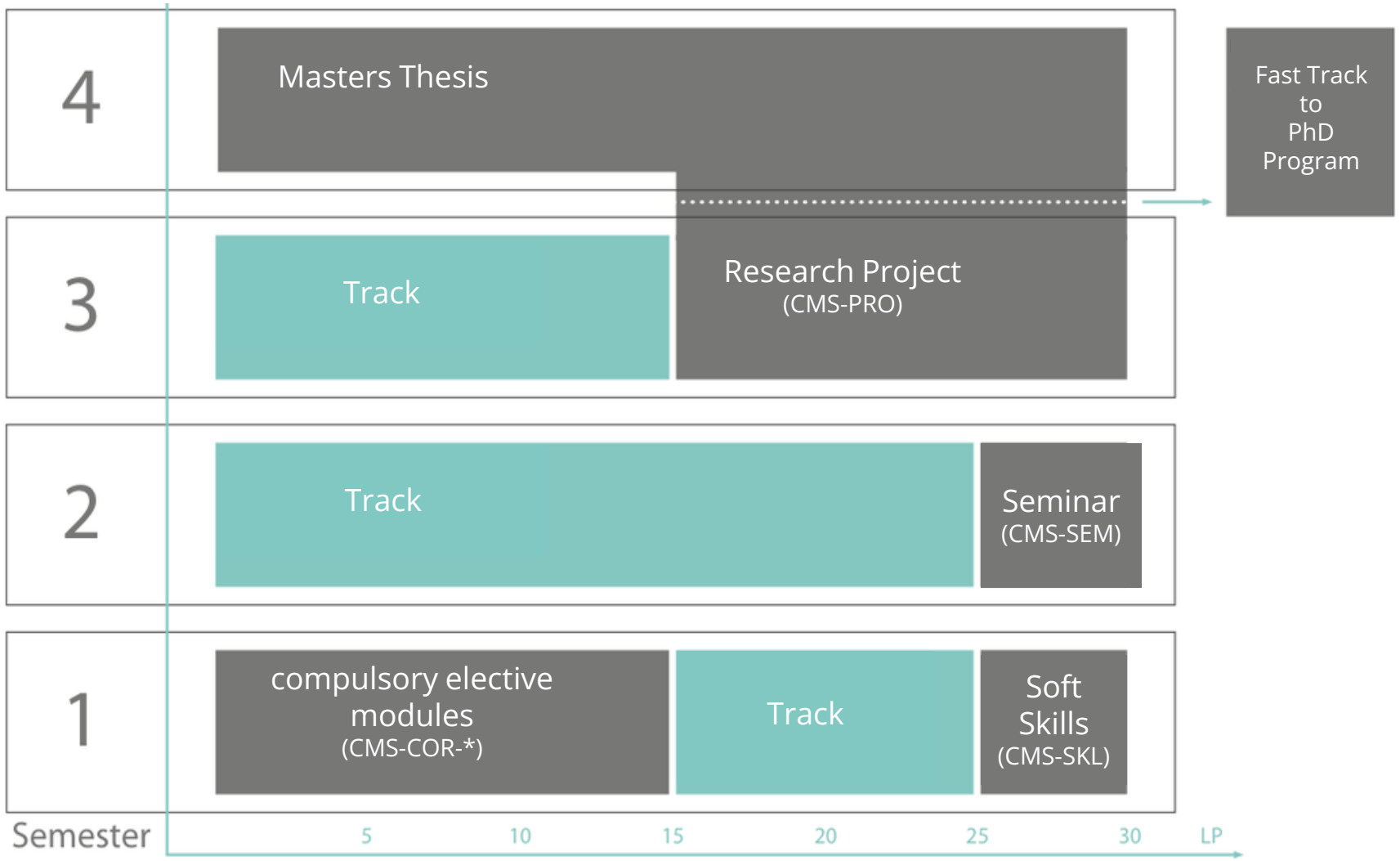
TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Presentation of Study Tracks

Program Structure



TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

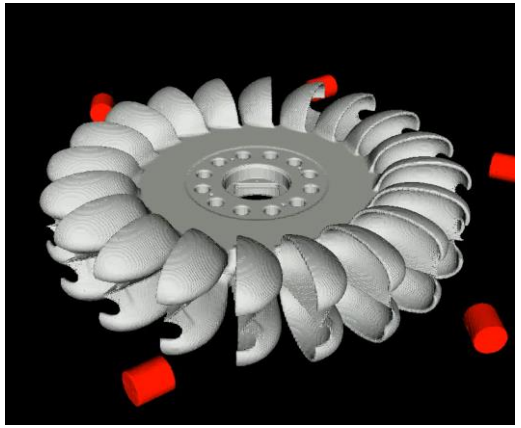
At a glance Computational Engineering

Prof. Michael Beitelschmidt – CMS-CE Coordinator

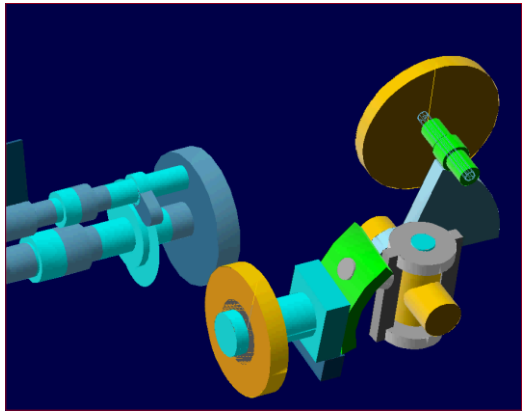
Dresden, 04.10.2024

Computational Engineering

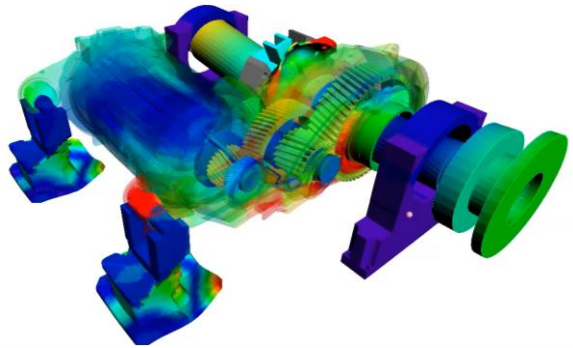
Modeling and simulation is state-of-the-art in modern engineering



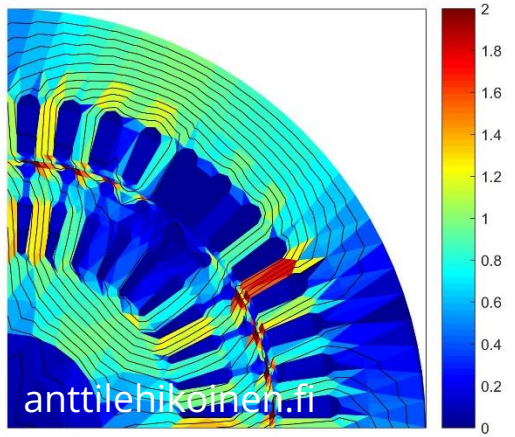
Computational Fluid Dynamics (CFD)



Multi-Body Dynamics (MBD)



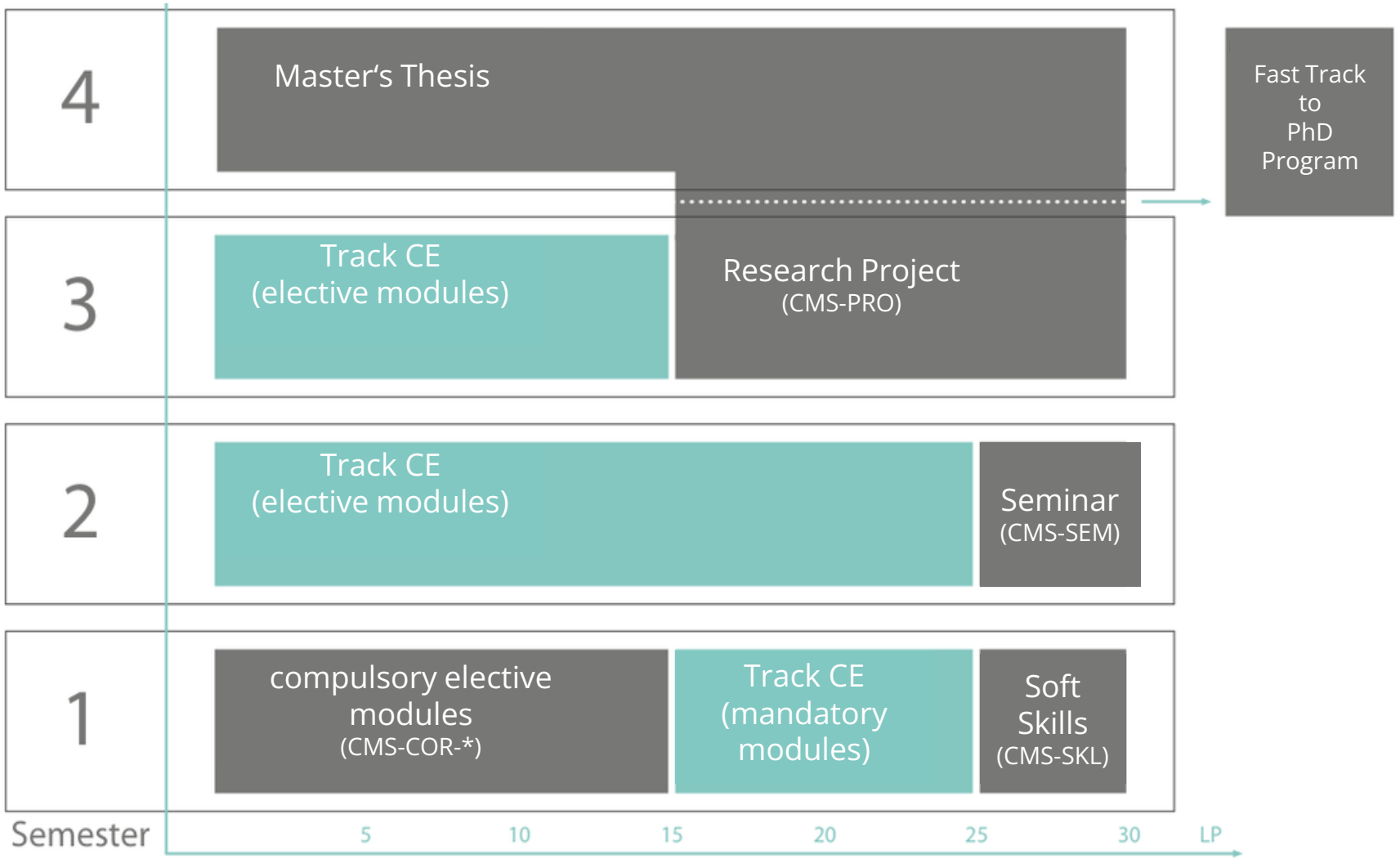
Finite Element Method (FEM), Structural



Finite Element Method (FEM), Electromagnetical

... and many other disciplines

Track Computational Engineering



© Ivo Sbalzarini

Track Computational Engineering

Semester 1

Please note the recommendations and comments in the example study paths!

Finite Element Methods

Computaional Fluid Dynamics

Soft Skills (CMS-SLK)

compulsory elective modules
Choose 3 from 10
(CMS-COR-*)

- Statistical Principles and Experimental Design
- Basic Numerical Methods
- Scientific Software Engineering
- Machine Learning and Data Mining
- Stochastics and Probability
- Parallel Programming and High-Performance Computing
- Foundations of Artificial Intelligence
- Data Visualization
- Database Management
- Knowledge Models

Track Computational Engineering

Semester 2 & 3

Advanced Topics in FE Analysis

Multifield Problems

Multibody Dynamics

Computational Engineering Basics

Computational Engineering Advanced

Seminar

Research Project

Choice from catalog
See recomendations in
example study paths

Track Coordinator

Prof. Dr. Michael Beitelschmidt

Chair for Dynamics and Mechanism Design
Faculty of Mechanical Engineering

Important reminder:
All Computational Engineering students are invited:
Tuesday, October, 15th at 04:40 pm
Room ZEU 247

- More details about curriculum
- Electives catalogue
- Mentoring, introduction of mentors
- Q&A

Mentoring System

Mentors

Prof. Dr.-Ing.
Jochen Fröhlich

Chair of Fluid Mechanics

Prof. Dr.-Ing.
Markus Kästner

Chair of Computational and Experimental Solid Mechanics

Prof. Dr.-Ing.
Thomas Wallmersperger

Chair of Mechanics of Multifunctional Structures

Prof. Dr.-Ing.
Michael Beitelschmidt

Chair of Dynamics and Mechanism Design

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

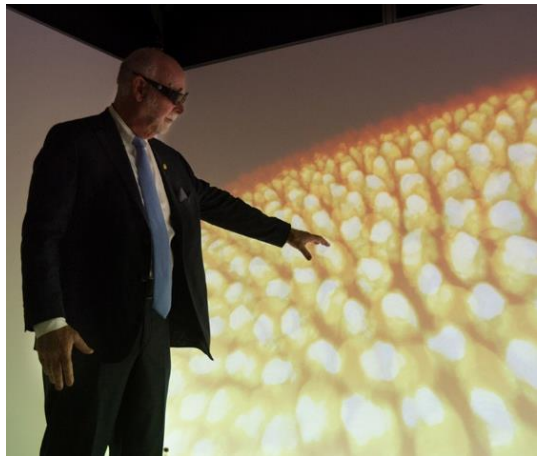
At a glance
Computational Life Sciences

- Dr. Nandu Gopan *on behalf of*
- Prof. Ivo Sbalzarini – CMS-CLS Coordinator

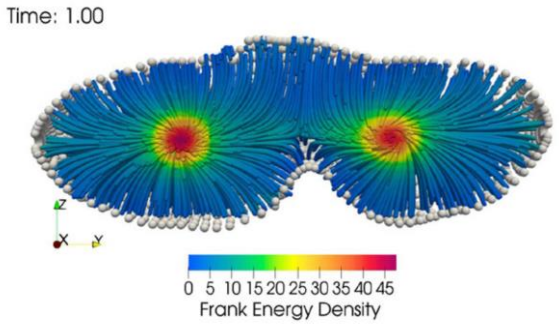
Why Computational Life Sciences track?

„Computer science is for today‘s life sciences what mathematics is for physics.“

Modeling and simulation define the future of medicine and biology.

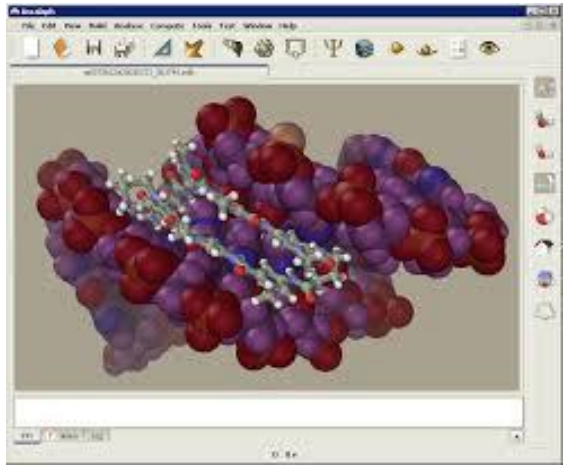


Biomedical Image Analysis and Visualization



Simulations of Biological Systems

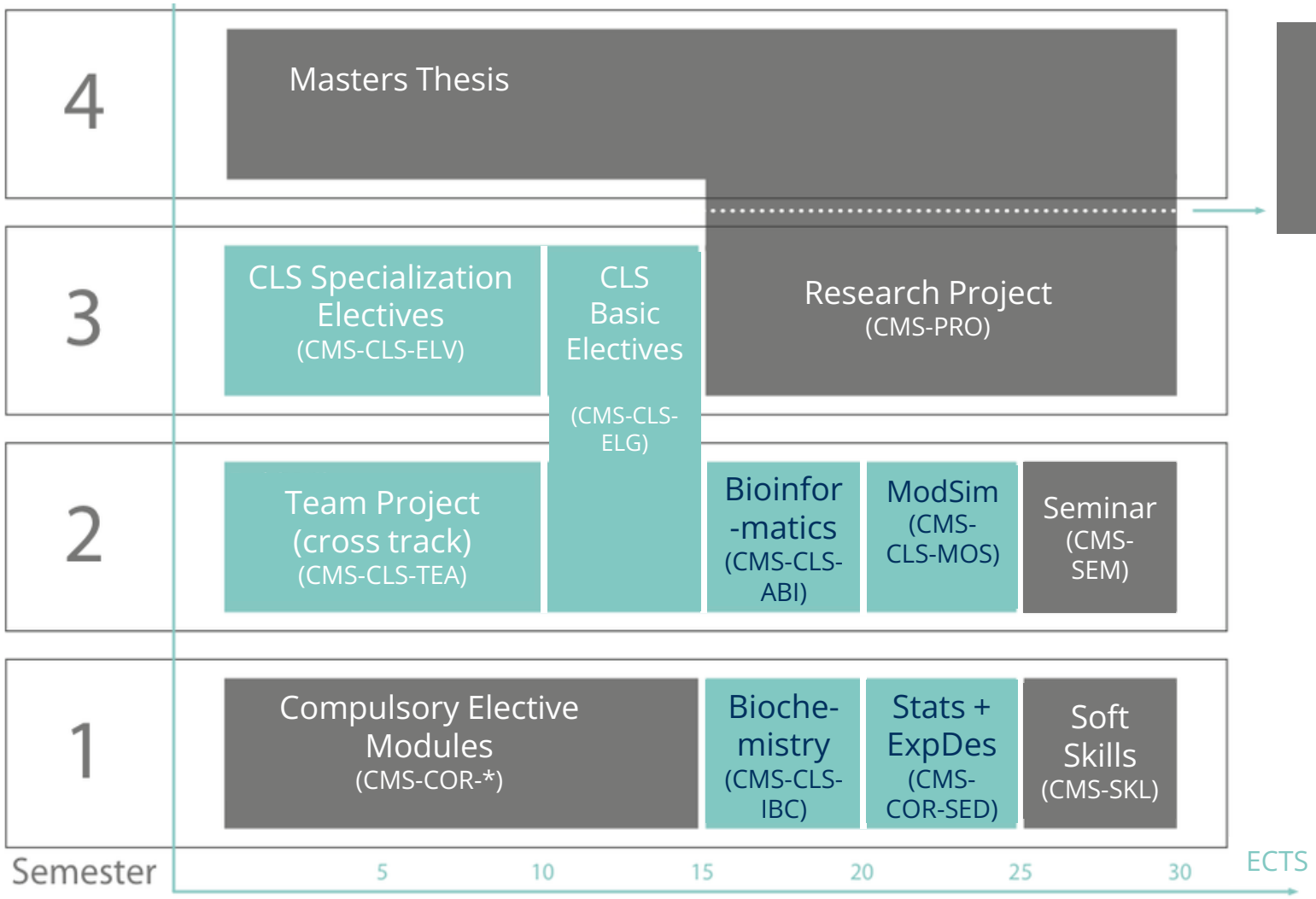
Virtual Surgery/ Personalized Medicine



Bioinformatics and Molecular Modeling

… and many other, like: Computational Neuroscience, Augmented Reality for Medicine, Drug Discovery, ….

The Track : Computational Life Sciences



Fast Track to PhD Program

IMPRS CELLDEVOSYS

DIGS-BB

SECAI

Track Mentors

+colleagues from:
Psychology
Medicine
Biology
MPI-CBG
CSBD

Prof. Ingo Roeder

Medical Biometry and Statistics

Faculty of Medicine

Prof. Ivo Sbalzarini

Scientific Computing for Systems Biology

Computer Science

Center for Systems Biology Dresden

Prof. Michael Schroeder

Bioinformatics

BIOTEC / CMCB

Computer Science

Prof. Ingmar Glauche

Medical Informatics and Biometrics

Faculty of Medicine

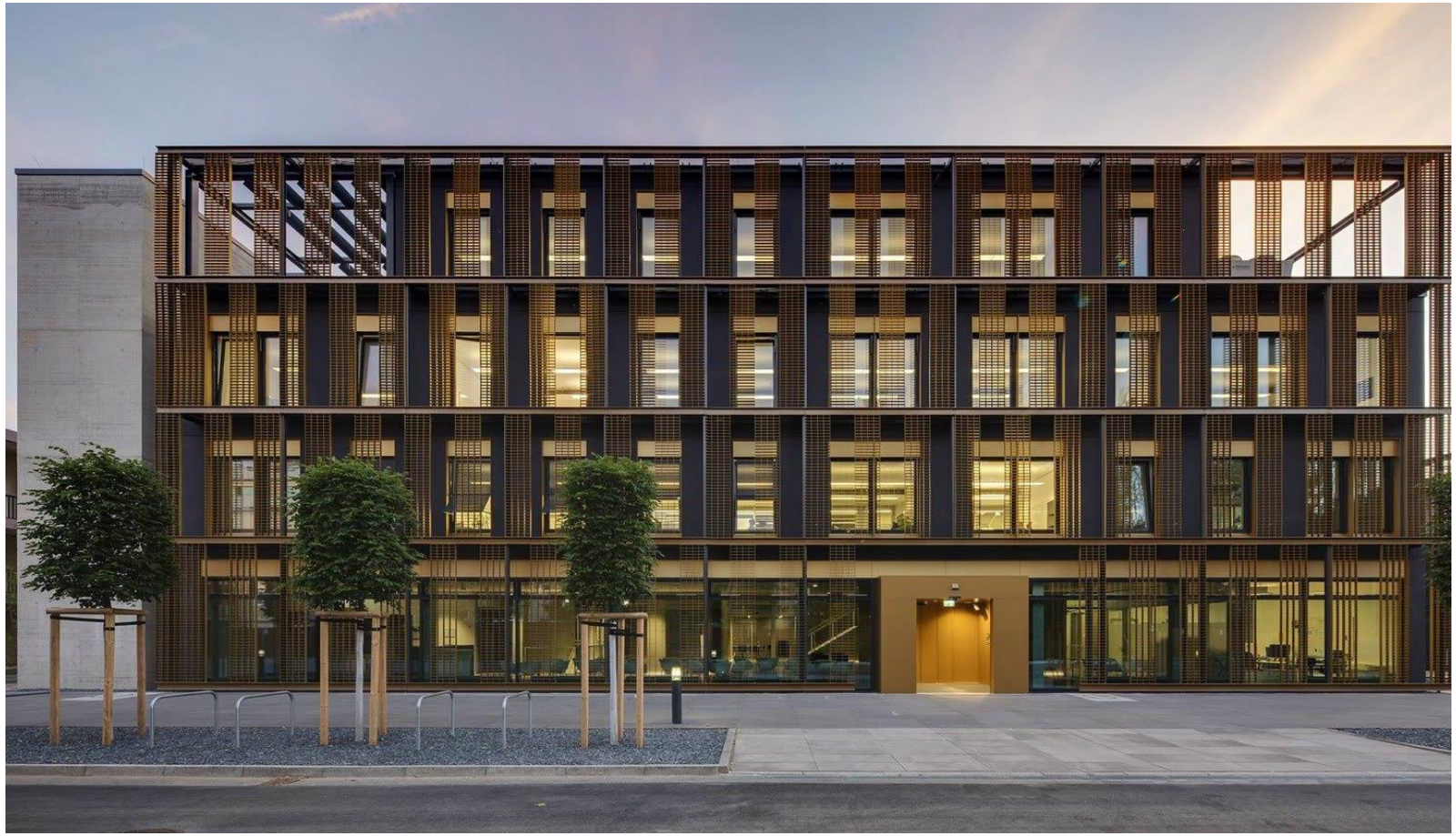
Questions?

Please feel free to mail:

nandu.gopan@tu-dresden.de

Dr. Nandu Gopan,

CSBD,
Pfotenhauerstrasse 108,
01307 Dresden



TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

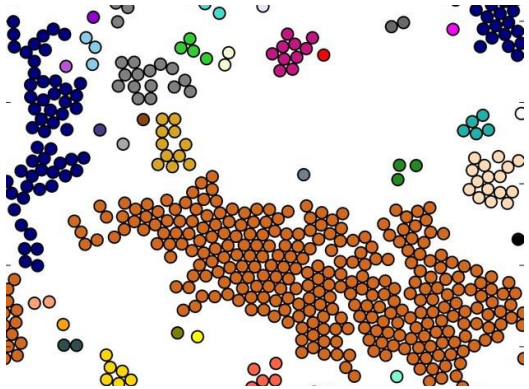
At a glance
Computational Mathematics

- Prof. Axel Voigt– CMS-CMA Coordinator

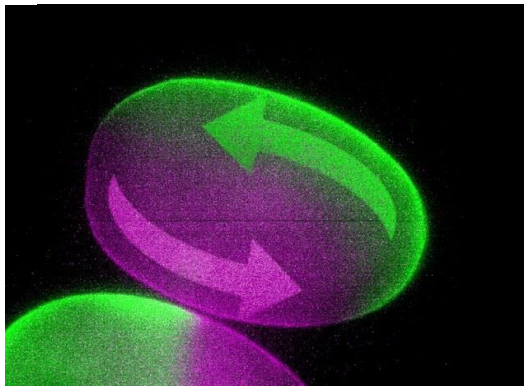
Computational Mathematics

Modeling and simulation next to experiments and theory

Algorithms for High Performance Computing



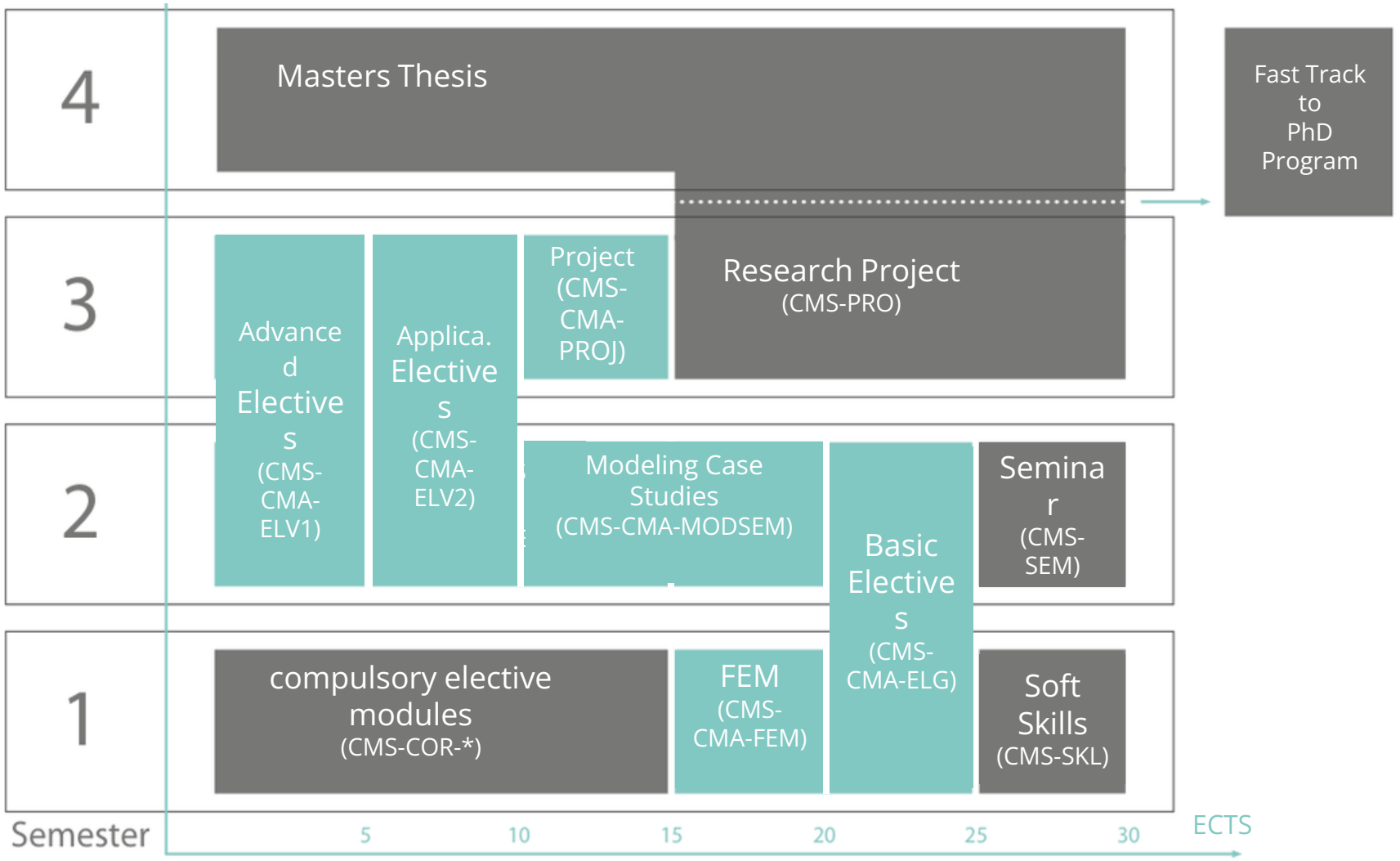
Simulations in Materials Science

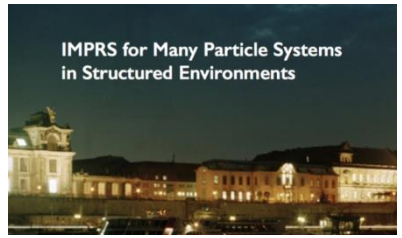


Simulations in Biology and Biophysics

Computational Architecture and Design

Track Computational Mathematics





Track Computational Mathematics

Semester 1

Electives Basics Part 1

choice from catalog

- Numerik of Partial Differential Equations, Prof. Matthies
- Advanced Concepts of Object-Oriented Computer Languages, Prof. Walter
- Computational Fluid Dynamics, Prof. Fröhlich
- Introduction to Mathematical Biology, Prof. Deutsch
- Biophysical Methods, Prof. Schlierf

...

Track Mentors

Prof. Dr. Axel Voigt

Chair of Scientific Computing and Applied Mathematics

Faculty of Mathematics

Center for Systems Biology Dresden

Prof. Dr. Oliver Sander

Chair of Numerics for Partial Differential Equations

Faculty of Mathematics

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

At a glance
Visual Computing

- CMS-VC Coordinator: Prof. Stefan Gumhold

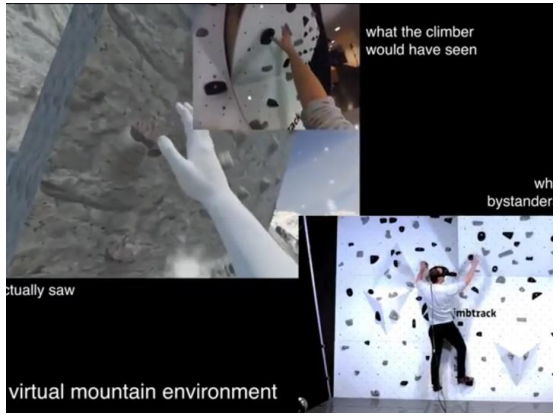
- Dresden, 04.10.2024

Visual Computing

Modeling and simulation enables Visual Computing applications that change the world

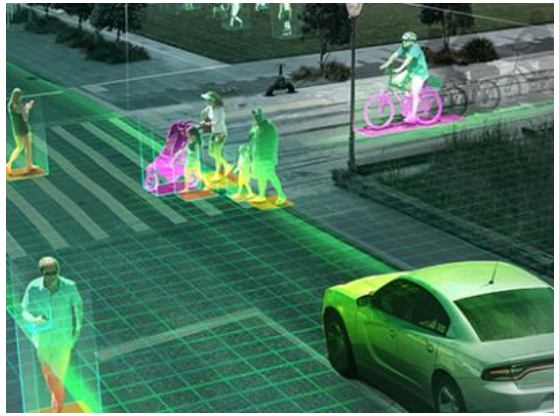
© Marvel Studios, 2018

SFX in Movies



© DFKI, 2018

VR-based Training



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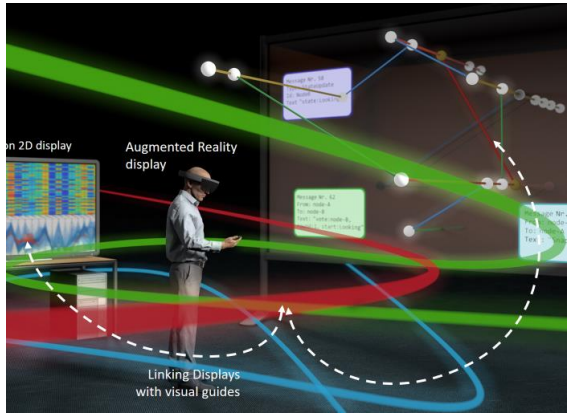
Autonomous Driving



© CGV, 2018

Immersive Visual Analytics

… future systems need to combine techniques from computer vision, computer graphics, interaction design, and machine learning

Track Mentors & Contributers

Prof. Dr. Stefan Gumhold

Chair for Computer Graphics and Visualization

Faculty of Computer Science

Prof. Dr. Raimund Dachselt

Chair of Multimedia Technology, and Head of Interactive Media Lab Dresden

Faculty of Computer Science

Prof. Dr. Björn Andres

Chair for Machine Learning for Computer Vision

Faculty of Computer Science

Jun.-Prof. Dr. Matthew McGinity

Junior Professorship in Immersive Media, and Head of Immersive Experience Lab

Faculty of Computer Science

Prof. Dr. Stefanie Speidel

Department for Translational Surgical Oncology

NCT Dresden & Faculty of Medicine Science

Prof. Dr. Roberto Calandra

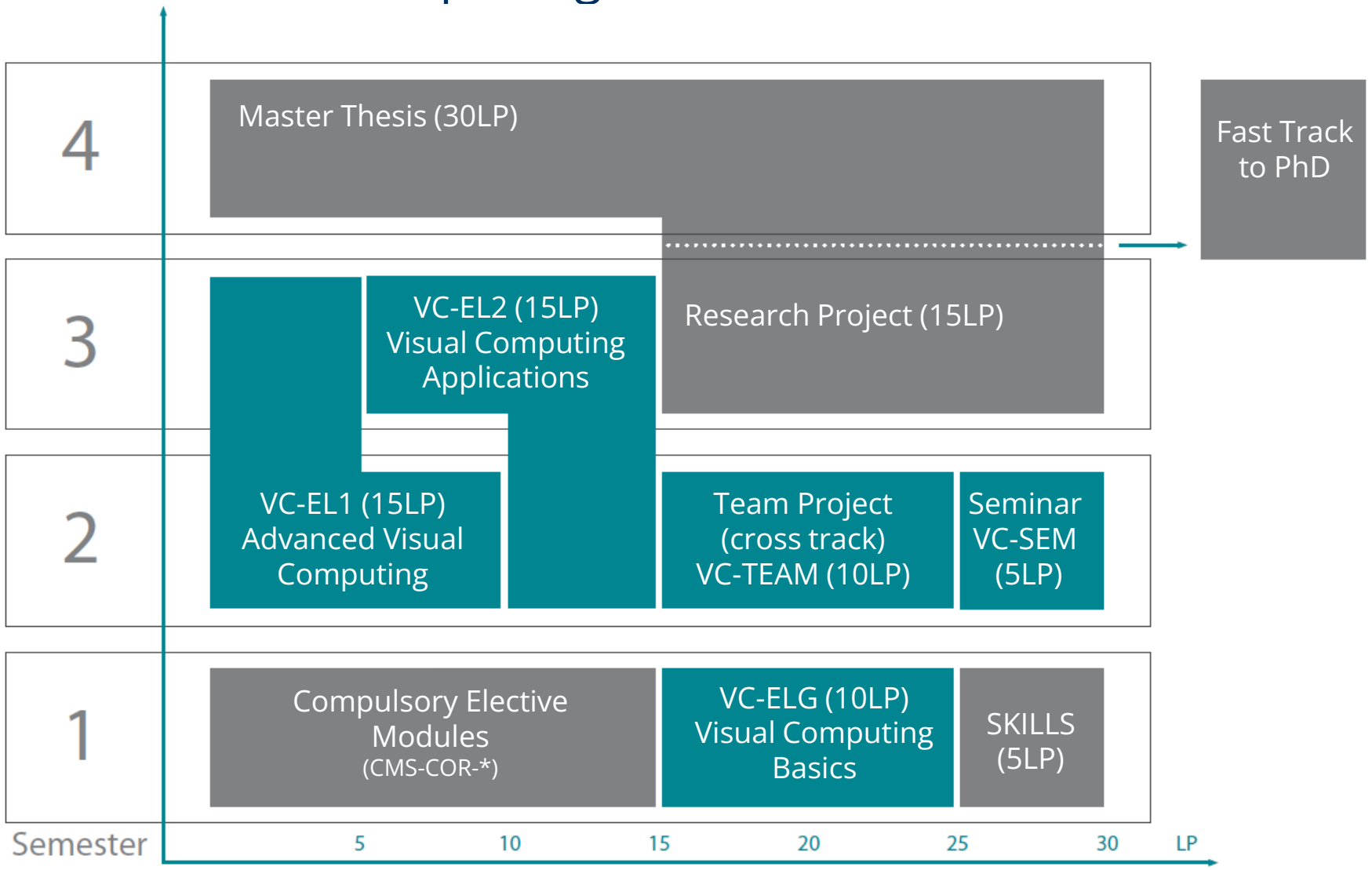
Chair for Explainable Artificial Intelligence Learning, Adaptive Systems &Robotics

Faculty of Computer Science

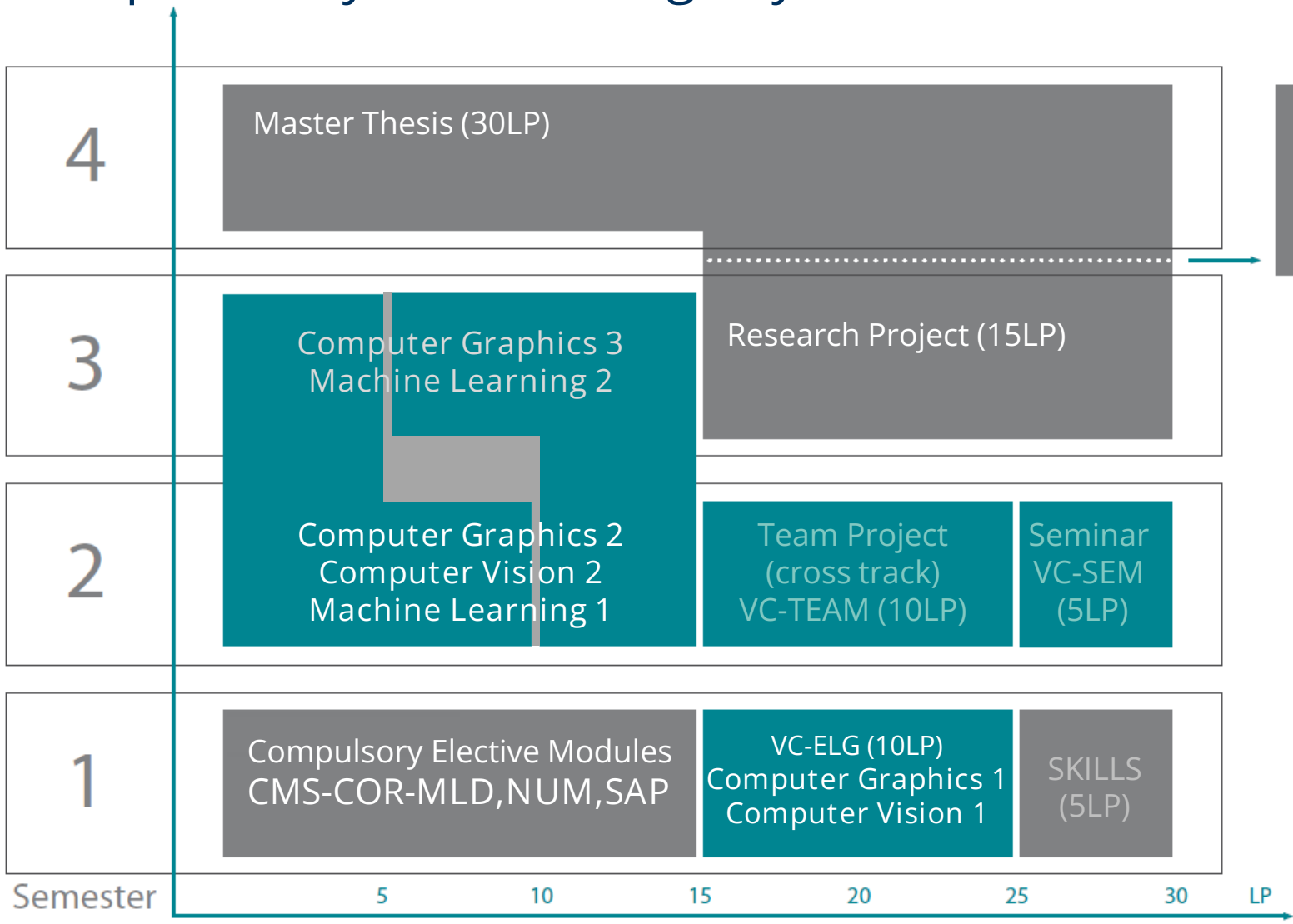
+more colleagues from:

CS
Math
Medicine
Biology
MPI-CBG
CSBD

Track Visual Computing



Sample Study Path – Image Synthesis & Understanding



Other Sample Study Paths

- 3D Scene Understanding & Interaction
- Interactive Visualization
- Visual Analysis
- Interactive Steering & Exploration
- Augmented Reality

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

At a glance
Computational Modeling in Energy Economics

- Prof. Dominik Möst – CMS-EE Coordinator

What makes us special?

Systemic aspects of energy supply
Applied energy economics and techno-economic analysis of energy systems

1. Development of models and other methodic approaches to support decision-making in the energy sector

Application on various levels

2. Power plant dispatch & evaluation / integration of RES
3. Transmission & distribution networks, congestion mgmt. & nodal pricing
4. National / inter-national energy systems and markets / market coupling

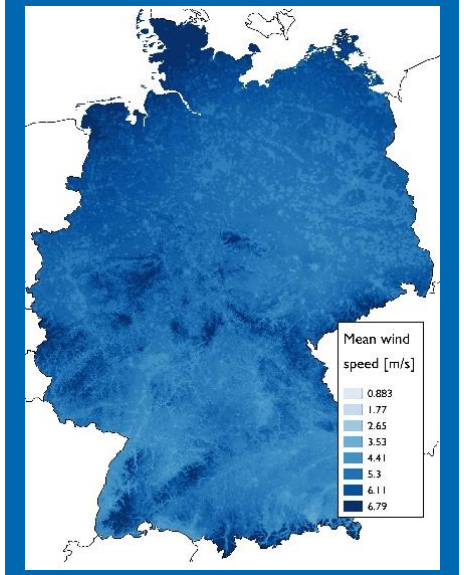
5. Political / regulatory issues, market design, business models

ee²

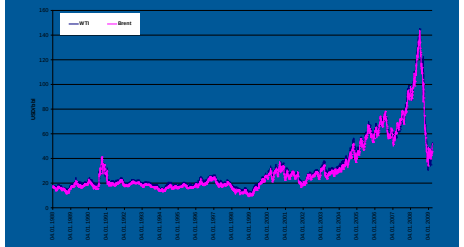
National / international research projects

- H_2-Ready
- MINFRA
- VerSEAS
- DigiTechNetz
- EffiziEntEE

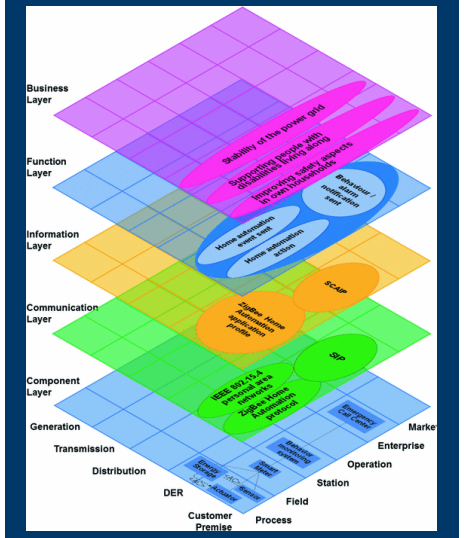
Computational Modeling in Energy Economics



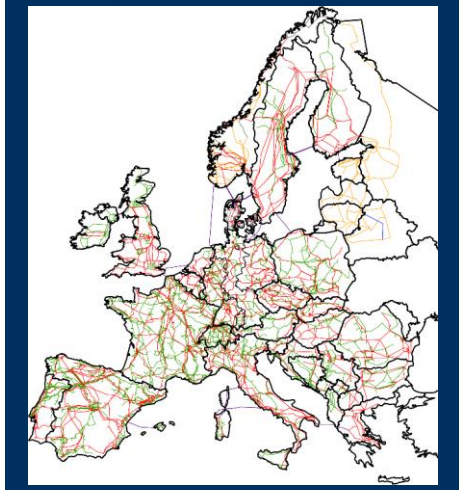
Data Science in Energy Economics



Market Analyst in Energy Economics

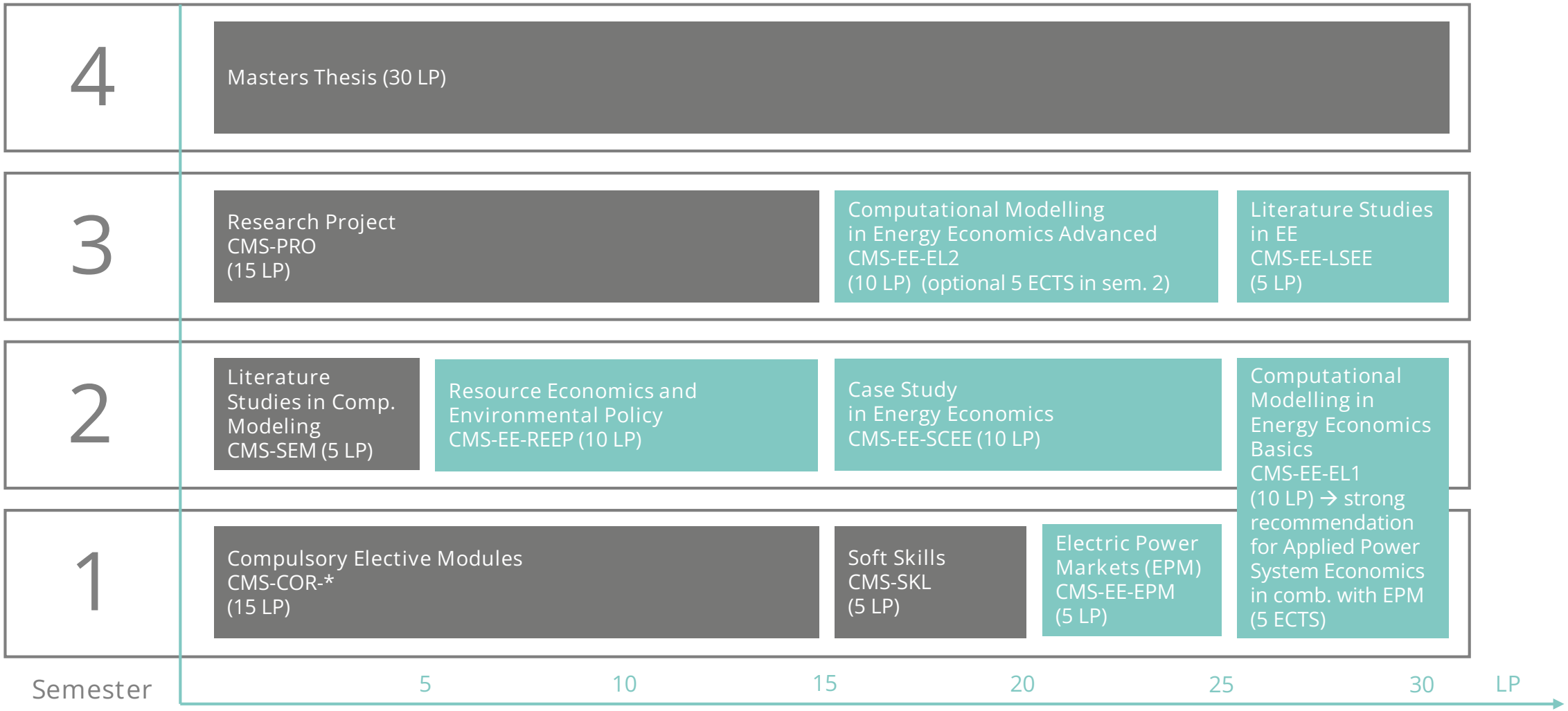


Software implementation for power utilities

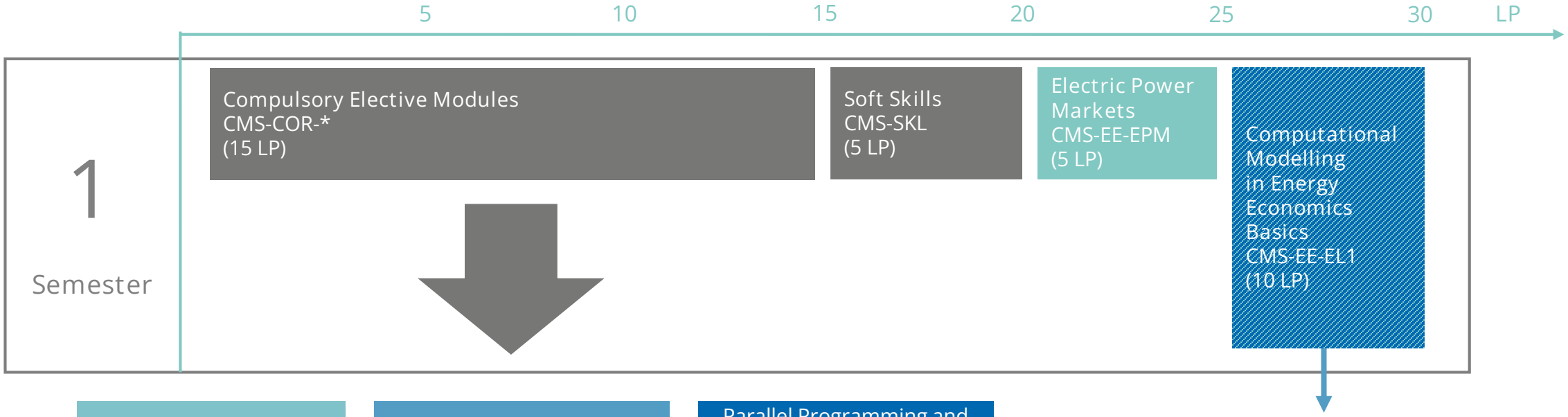


Data Science and fundamental modelling in energy management

Track Computational Modeling in Energy Economics



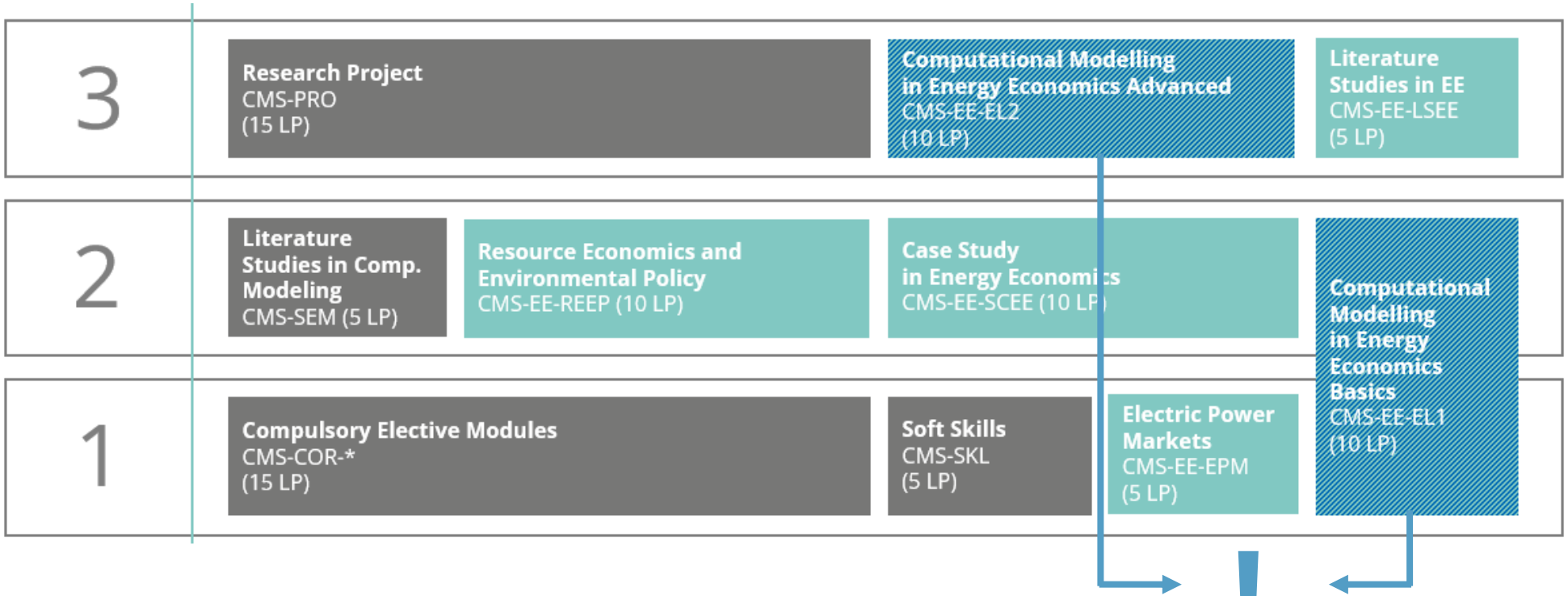
First Semester



Choose from the catalogue

Data Science	Market Analyst	Software-oriented
Machine Learning and Data Mining	Statistical Principles and Experimental Design	Parallel Programming and High-Performance Computing
Data Visualization	Basic Numerical Methods	Basic Numerical Methods
Statistical Principles and Experimental Design	Stochastics and Probability	Knowledge Models

Following Semesters



- The lecture organized by the chair is offered in both catalogs, but can only be attended once
- Remaining module does not contain further directly energy economic related lectures

Choose from the catalogue

Track Mentor

Prof. Dr. Dominik Möst

Chair of Energy Econmics

Faculty of Business and Economics

Do you have any questions?

dominik.moest@tu-dresden.de

Or just visit us on

www.ee2.biz

or in person

at SCH A410

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

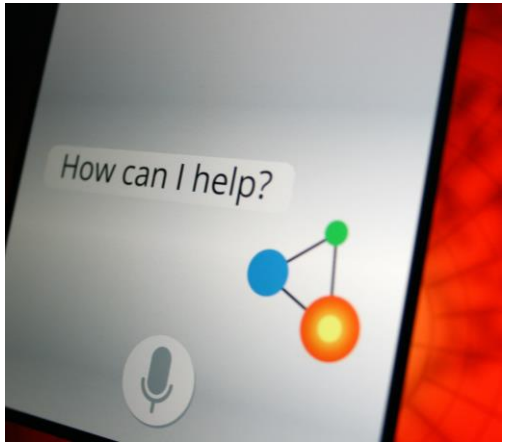
Computational Modeling and Simulation

At a glance
Logical Modeling

- Prof. Markus Krötzsch – CMS-LM Coordinator

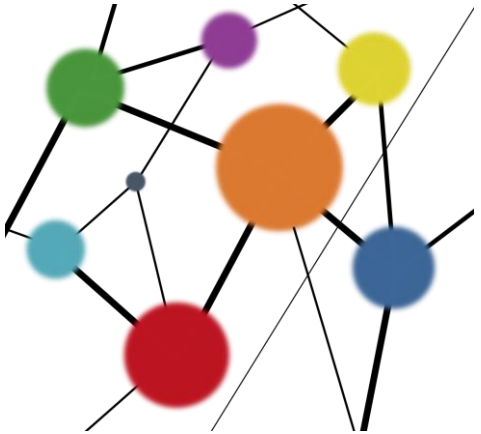
Logical Modeling

Logical Modeling is a cornerstone of artificially intelligent systems

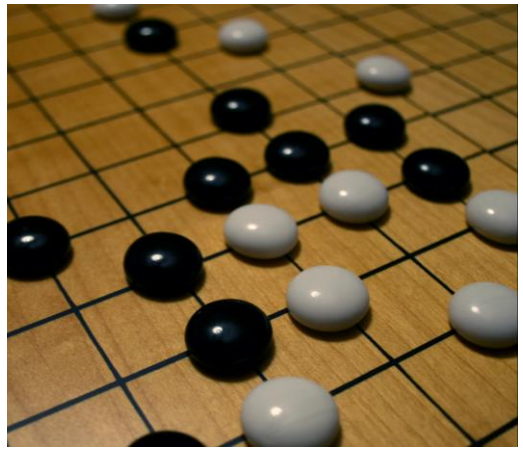


Intelligent Agents

Formal Analysis



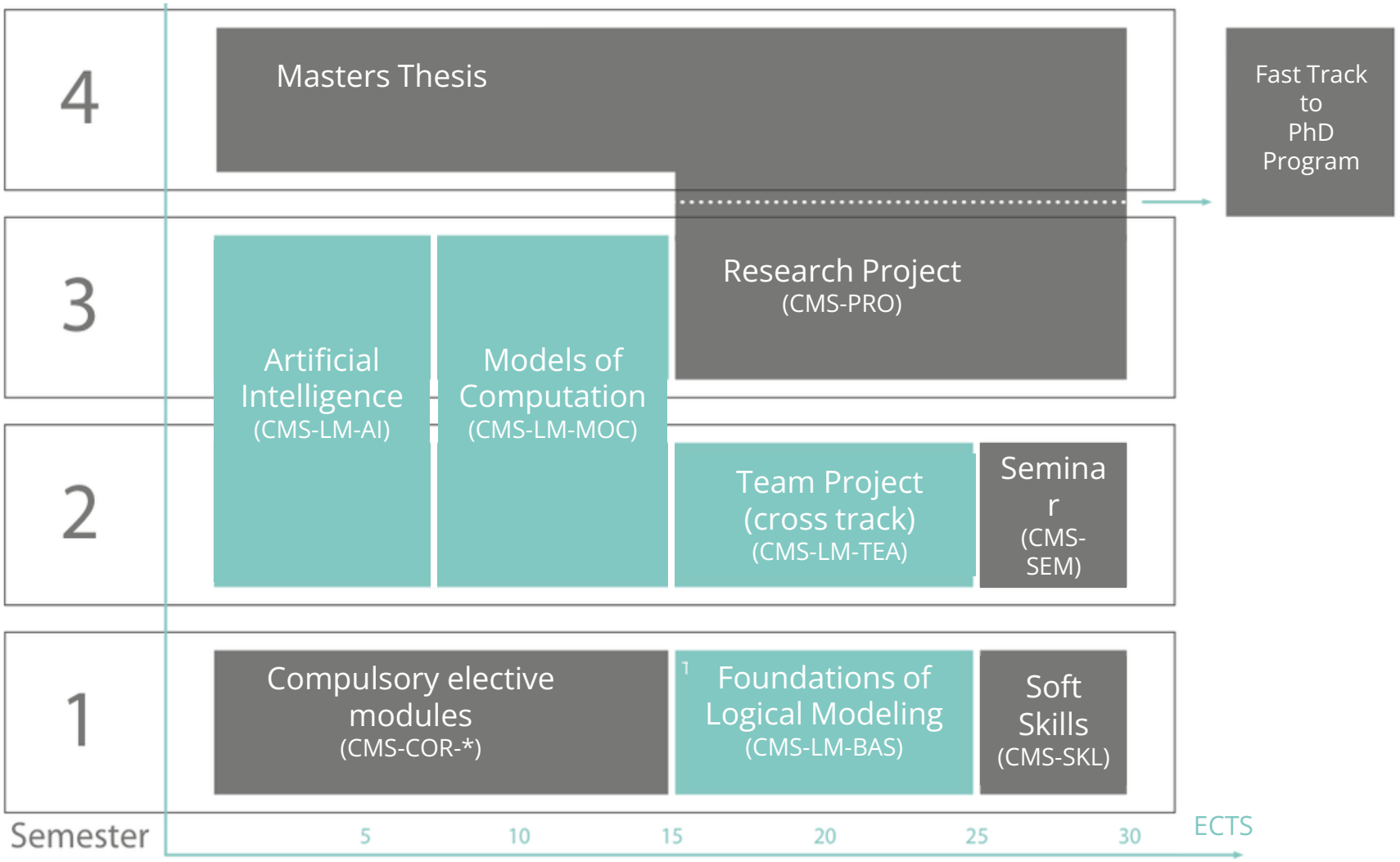
Knowledge Graphs



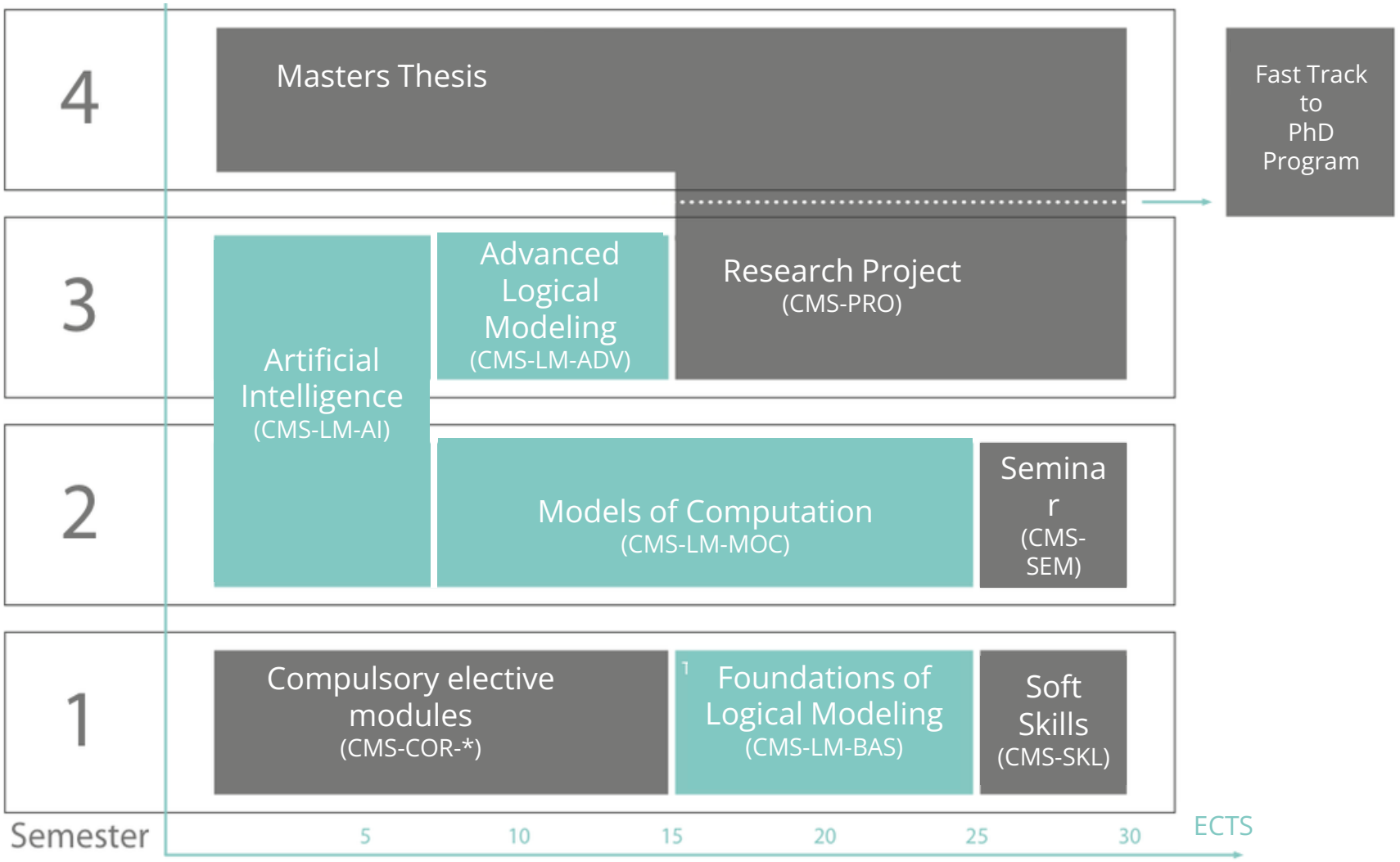
Problem Solving

... and many others, such as data analysis, logic programming, Semantic Web, dependable systems, planning and optimisation, ...

Track Logical Modeling: Option 1 with Team Project



Track Logical Modeling: Option 2 with Advanced Courses



Track Logical Modeling

Semester 1

Please note the recommendations and comments in the example study paths!

Foundations of Logical Modeling
(CMS-LM-BAS)

Found. of Knowledge Representation
Found. of Logic Programming
Tutorial Logic Programming

Soft Skills
(CMS-SLK)

Compulsory elective modules
Choose 3 out of 6
(CMS-COR-*)

Foundations of Artificial Intelligence

Knowledge Models

Machine Learning and Data Mining

Stochastics and Probability

Data Visualization

Database Management

...

Track Logical Modeling

Semesters 2 & 3

Artificial Intelligence

Models of Computation

Seminar (cross track)

Research Project

Team project (cross track)

Advanced Logical Modeling

Choose one

Track Mentors and Closely Affiliated Professors

Franz Baader
Automata Theory

Christel Baier
Verification and
Formal Quantitative
Analysis

Björn Andres
Machine Learning
for Computer Vision

Sebastian Rudolph
Computational Logic

Markus Krötzsch
Knowledge-Based
Systems

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Personal Mentoring System

Personal Mentoring System

- Every student has been assigned a mentoring professor at the time of admission
- Typical reasons for contacting your mentor:
  - Lecture selection and study planning (esp. in the beginning!)
  - Identification of suitable institutions of TU Dresden specific requests
  - Help when looking for research projects, thesis topics, etc.
  - Career advice

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Curricular Module System

Curricular Module System

- There are modules and courses. They are not the same.
- Modules define learning goals. Different combinations of (one or more) courses may allow you to reach these goals. Talk to your mentor!
- You need to register first for modules, then for courses suitable for these modules.
- Exams are for modules. Failed module examinations can be repeated twice. Completed module examinations cannot be repeated.
- Modules are worth between 5 and 15 ECTS credits.
- Module descriptions define modalities.

Study Schedule: Which modules to take when?

Module No.	Module Name	First semester	Second semester	Third semester (M)	Fourth semester	Cred.	Total Cred.
		L/P/S/T/PW/I/LC	L/P/S/T/PW/I/LC	L/P/S/T/PW/I/LC			
Compulsory Modules of Basic Education							**25**
CMS-SKL	Soft Skills	2/0/0/0/0/0/2 2GW				5	
CMS-PRO	Research Project			0/0/0/0/12/0/0 2GW		15	
CMS-SEM	Literature Studies in Computational Modeling		0/0/4/0/0/0/0 GW*			5	
Elective **Compulsory Modules** of the Basic Education (3 of 10, for the track "Computational Life Science" 3 of 9)							**15**
CMS-COR-MLD	Machine Learning and Data Mining	2/2/0/0/0/0/0 GW				5	
CMS-COR-HPC	Parallel Programming and High-Performance Computing	2/2/0/0/0/0/0 GW				5	
CMS-COR-NUM	Basic Numerical Methods	2/2/0/0/0/0/0 GW				5	
CMS-COR-SAP	Stochastics and Probability	2/1/0/1/0/0/0 GW				5	
CMS-COR-VIZ	Data Visualization	2/2/0/0/0/0/0 GW				5	
CMS-COR-SED	Statistical Principles and Experimental Design (not selectable for the Track CLS)	2/2/0/0/0/0/0 GW				5	

Study Schedule: Which modules to take when (for a specific track)?

Module No	Module Name	First semester	Second semester	Third semester (M))	Fourth semester	Cred.	Total Cred.
		L/P/S/T/PW/I/LC	L/P/S/T/PW/I/LC	L/P/S/T/PW/I/LC			
Choice of a track from six options							
Computational Life Science							**50**
CMS-CLS-IBC	Introduction to Biochemistry	2/0/0/0/0/2/0 GW				5	
CMS-COR-SED	Statistical Principles and Experimental Design	2/2/0/0/0/0/0 GW				5	
CMS-CLS-ELG	Computational Life Science Basic		4 HPW* GW*	4 HPW* GW*		10	
CMS-CLS-ABI	Applied Bioinformatics		2/2/0/0/0/0/0 GW			5	
CMS-CLS-MOS	Modeling and Simulation in Biology		2/2/0/0/0/0/0 GW			5	
CMS-COR-TEA	Computational Life Science Teamproject		0/0/0/0/8/0/0 2GW			10	
CMS-CLS-ELV	Computational Life Science Advanced			8 HPW* GW*		10	

Module Description: How many hours are required for the module? What does the exam look like? When is it offered? How is the grade averaged?

Module Number	**Module Name**	**Responsible Lecturer**
CMS-PRO	Research Project	Prof. Dr. Björn Andres bjoern.andres@tu-dresden.de
Qualification Objectives	The students master the practical application and transfer of acquired knowledge in an independent scientific project. They are able to identify a problem and divide it into steps that can be worked on independently. They can communicate autonomously about the project and find help when necessary. They are proficient in the scientific methods of computer modelling, in particular the design, implementation and validation of models and simulations. They are able to translate these simulations into a complex application problem.	
Content	The module includes a computer-aided modelling or simulation project on a topic of the student's choice in Computational Life Science, Computational Mathematics, Visual Computing, Computational Modelling in Energy Economics, Computational Engineering and Logical Modeling.	

Course Catalogue: Which courses to choose from in a module?

New: Courses are only announced here: https://wwwdek.inf.tu-dresden.de/mole-web/catalogs/wise2425/program/cms_master_2020/courses/en

	CMS-CLS-ELG Computational Life Science Basics			Modulverantwortlicher Dozent:			Prof. Dr. Ivo F. Sbalzarini		M1107-CMS21
	Katalogmodul (Soll: 8 SWS)								
	Eine Lehrveranstaltung des Katalogs CMS-CLS-ELG kann nicht gewählt werden, wenn diese bereits in einem anderen Pflichtmodul mit wahlpflichtigem Inhalt bzw. in einem Wahlpflichtmodul der Grundlagenausbildung im Masterstudiengang Computational Modeling and Simulation gewählt wurde.								
	Please note that any course of the catalogue CMS-CLS-ELG cannot be selected if it has been already selected for another CMS-module.								
	Die Modulnote ergibt sich aus dem nach Semesterwochenstunden (SWS) gewichteten Durchschnitt der Noten der Prüfungsleistungen. The module grade is the average of the grades of the individual examinations, weighted by course effort (SWS, semester-week-hours).								

Nr.	LV-Name/course title	Fakultät/ faculty	Dozent/lecturer	SWS effort	Sprache/ Language	Semester	Prüfer/examiner	Prüfungart examination performance	Duration	Wichtung nach SWS/ Weighting	Kursnummer selma	Bemerkungen
1	Biophysical Chemistry	CMCB	Elisabeth Fischer-Friedrich	2V	englisch	Winter	Fischer-Friedrich	Klausurarbeit	90 min	2	K1112-5NB11aV	
2	Biophysical Methods	CMCB	Michael Schlierf	2V/2S	englisch	Winter	Schlierf	Referat	?	4	K1112-5NB23	
3	Dynamics of Protein Networks	CMCB	Simon Alberti	2V	englisch	Sommer	Simon Alberti	Referat	30 min	2	K1112-5MB22V	
4	Genome Engineering	CMCB	Francis Stewart		lisch	Sommer	Stewart	Referat	30 min	2	K1112-5NBE2bV	
5	Introduction to Proteomics	CMCB				Winter	Simon Alberti	Klausurarbeit/mündl. Prüfung <= 15 Teilnehmer		3	K1112-5MB23V	
6	Principles of Biophysics	CMCB				Winter	Schlierf	Klausurarbeit	90 min	4	K1112-5MB15b	
7	Theoretical Biophysics	CMCB	Frank Jülicher		glisch	Sommer	Grill	mündl. PL	20 min	3	K1112-5NB24	
8	Advanced User Interfaces	INF	Raimund Dachselt Anke Lehmann	2V/2Ü	deutsch/englisch	Sommer	Raimund Dachselt Anke Lehmann	Klausurarbeit	90 min	4	K1104-MA0001	
9	Basic Numerical Methods	INF	Ivo Sbalzarini	2V/2Ü	englisch	Winter	Sbalzarini	Klausurarbeit 90 min/mündl. PL 30 min < 10 Tn		4	K1107-MA0017	
10	Computer Vision 1	INF	Björn Andres	2V/2Ü	englisch	Winter	Björn Andres	mündl. PL	30 min	4	K1107-MA0009	
11	Computer Vision 2	INF	Björn Andres	2V/2Ü	englisch	Sommer	Björn Andres	mündl. PL	30 min	4	K1107-MA0016	
12	Computergraphik 1	INF	Stefan Gumhold	2Ü	deutsch/englisch	Winter	Gumhold	Klausurarbeit 90 min/mündl. PL 20 min <=15 Tn		4	K1104-MA0025	
13	Computergraphik 2				englisch	Sommer	Gumhold	Klausurarbeit 90 min/mündl. PL 20 min <=15 Tn		4	K1104-MA0005	
14	Transactional Information Systems				englisch	Winter	Wolfgang Lehner Dirk Habich	Klausurarbeit 90 min/mündl. PL 30 min < 10 Tn		4	K1106-MA0020	
15	Data Visualization	INF	Raimund Dachselt Stefan Gumhold	2Ü	deutsch/englisch	Winter	DachseltGumhold	Klausurarbeit 90 min/mündl. PL 30 min < 10 Tn		4	K1104-CMS03	
16	Design Patterns and Frameworks	INF	Uwe Aßmann Sebastian Götz	2V/2Ü	englisch	Winter	Uwe Aßmann Sebastian Götz	Klausurarbeit 90 min/mündl. PL 15 min < 20 Tn		4	K1104-MA0020	
17	Digitization and Data Analytics: Architectures, Methods and	INF	Wolfgang Nagel	2V/2Ü	englisch	Sommer	Wolfgang Nagel	Klausurarbeit	90 min	4	K1102-ZIH03	NEU ab 1.4.2021

Watch semester

Watch language

DRESDEN concept

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Fast Track to PhD

Fast Track to PhD

- Opportunity in case you decide by the 3rd semester to continue graduate studies toward a PhD
- Procedure
  - Undergo the selection process of a doctoral program before the 4th semester
  - Join the group of your doctoral advisor in the beginning of the 4th semester as a (paid) doctoral student
  - Start working on your PhD project immediately
  - Write a Master's thesis as an integral part of your doctoral studies after 22 weeks
  - Write a dissertation typically after 3-4 years
  - Save ½ year overall

A Selection of Available PhD Programs

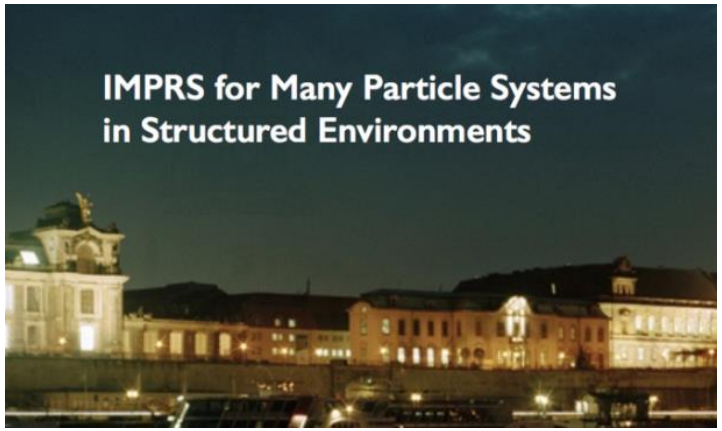
dresden international phd program

DIGS-BB

MATH Meisterklasse Mathematik

IMPRS CELLDEVOSYS

DCMS Dresden Center Computational Materials Science



TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Language Course Offerings

TUDIAS

TU Dresden Foreign Language Courses

TUDIAS
BILDUNG . SPRACHE . GEMEINSCHAFT

TECHNISCHE UNIVERSITÄT DRESDEN
RESDEN concept

Languages on offer

Ancient Greek	Arabic	Chinese	German
English	Finnish	French	Italian
Japanese	Latin	Polish	Portuguese
Russian	Swedish	Spanish	Czech

TU Dresden Foreign Language Courses

TUDIAS is presented on the CMS-Webseite (see „study“ language courses)
https://tu-dresden.de/ing/informatik/studium/studienangebot/master-studiengaenge/computational-modeling-and-simulation/Courses_1
Registration always with OPAL starting in April/October.
Winter term 24/25:
Registration starts on 1 October 2024
Classes begin on 21 October 2024.
Consider the dates for the levelling tests.
Explanatory video provides information about further registration formalities.

Contact: sprachen.zentrum@tu-dresden.de

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Examination Office

Kerstin Kruse

CMS exam office

Kerstin Kruse
Room: APB-3038; 01069 Dresden
Phone: +49 351 463 38378
Email: cms-examoffice@mailbox.tu-dresden.de

The examination office is responsible for the administration of examinations.

https://tu-dresden.de/ing/informatik/studium/studienangebot/master-studiengaenge/computational-modeling-and-simulation

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Computational Modeling and Simulation

Complaints Office

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Anti-discrimination

Dealing with harrasment, discrimination and violence

TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Responsibility

Technische Universität Dresden is firmly committed to standing up to harassment, discrimination and violence. This commitment is anchored in its statutes and regulations as well as in corresponding framework plans and concepts. It encourages members or associates of TU Dresden to assume collective responsibility.

According to the "Guideline for Dealing with Harassment, Discrimination and Violence", both employees and students can reports incidents of this kind and TU Dresden is obliged to investigate and prevent (repeated) discrimination.

In order to prevent incidents of harassment, discrimination and violence, TU Dresden offers regular training, education courses and information for students and staff.

TU Dresden participates in various action days, such as the International Day for the Elimination of Gender-Based Violence on November 25, with different measures to raise awareness.

For employees and students either affected or interested in discrimination prevention, there are a number of counselling services offered by various representatives and commissions incl. the Personnel Council, psychological counsellors, the queer peer counselling or the conflict mediators among others.

Complaints Office
for Incidents of Harassment, Discrimination, Violence

The TU Dresden Complaints Office is the central point of contact for students, staff and other members of the university who experience or observe discrimination and have questions or need support on the topic of (anti-) discrimination.

The complaints office acts as a counselling, referral and specialist office. Its goal is to reduce discrimination not only on an individual, but also on a institutional and structural level. It is affiliated with the Vice-Rectorate University Culture.

Anyone can contact the complaints office also anonymously or get consultation in English.

Contact: Anja Wiede (cis-femal, white, abled-bodied)

⌖ Mommsenstraße 13, Room 6-234, 01069 Dresden

✆ +49 351 463-33564

✉ beschwerden-diskriminierung@tu-dresden.de

🔗 https://tu-dresden.de/tu-dresden/universitaetskultur/antidiskriminierung

Core Values and Guiding Principles

Please read them!

You subscribed to them with your registration

CORE VALUES AND HELP

Core Values and Guiding Principles

In accordance with the ›Mission Statement of TU Dresden, the master's program "Computational Modeling and Simulation" stands for and maintains the following values and guiding principles.

The M.Sc. program "Computational Modeling and Simulation" embodies an **interdisciplinary, cooperative, and inclusive spirit, built on the foundation of diversity**. Its members and students value and foster diversity of nationalities, social backgrounds, geographic origins, ethnicities, scientific disciplines, gender, sexual orientation, age, beliefs, values, lifestyles, physical ability, opinions, perspectives, and thoughts. We strongly believe that diversity is a prerequisite for creativity in research and teaching, and we recognize its importance. We vouch for a **family-friendly atmosphere of fairness, equality, and mutual respect in a diverse group of people**.

A list of contacts for help and reporting

HelpLine Dresden

Contacts for Help and Reporting

- Your CMS mentor
- Ombudsperson of the Faculty of Computer Science (in particular for incidents of harassment): https://wwwtcs.inf.tu-dresden.de/~baier/
- Commissioner for students with disabilities or chronic illness: ›https://tu-dresden.de/tu-dresden/organisation/gremien-und-beauftragte/beauftragte/bfsb
- Equal Opportunity Officer and Women's Representative: ›https://tu-dresden.de/tu-dresden/organisation/gremien-und-beauftragte/gleichstellungs-und-frauenbeauftragte
- Confidential contact person for reporting and handling suspected scientific misconduct: ›https://tu-dresden.de/tu-dresden/qualitaetsmanagement/gute-wissenschaftliche-praxis-an-der-tu-dresden/index?set_language=en#section-7
- We-Care Contact Point for international students who feel harassed, threatened, or discriminated against in any way: ›https://tu-dresden.de/tu-dresden/internationales/we-care?set_language=en
- Office for Students with Children: https://kinder.studentenwerk-dresden.de/
- Psycho-Social Counseling: https://www.studentenwerk-dresden.de/english/soziales/psychosoziale-beratung.html
- Staff Unit Diversity Management: ›https://tu-dresden.de/tu-dresden/organisation/rektorat/prorektor-unientwicklung/stabsstelle-diversity-management/index?set_language=en
- Legal and Insurance Advise for Students / Law Counseling: https://www.studentenwerk-dresden.de/english/soziales/rechtsberatung.html
- Social Counseling for Students: https://www.studentenwerk-dresden.de/english/soziales/sozialberatung.html
- Point of contact for complaints about harrassment, discrimination, and violence at TU Dresden ›https://tu-dresden.de/tu-dresden/organisation/gremien-und-beauftragte/gleichstellungs-und-frauenbeauftragte/beschwerdestelle

Christoph Baitis
Fachschaftsrat Informatik

The iFSR - Your Student Representatives
A brief Overview

- **What is the iFSR?**

• Services

We anwser questions about your studies and are your representatives

Online Services
- Website
  - FTP Server with former exams
  - programming courses
- Social Media
  - Information about current events

Office (APB E017)
- items that can be rented
- printing service

ifsr.de/en

iFSR

Accessibility

Home | Student council | Service | Study | Meeting and minutes | Events

Student Council Computer Science

Student council
Your student representative

- Members
- Administrations
- Delegations
- Responsibilities
- Tenders
- Contact
- Regulations
- Sprechzeiten
- University elections

Service
Our offers for you

- Mailing lists
- Printing service
- Renting equipment
- Former exams
- Programming courses
- Oral Exam Protocols
- Degree calculator
- Spieleliste

Study
All for your studies

- Student advisory service
- Study abroad
- Link collection
- Aptitude Check
- Stoffkiste

Events

- Weekly meeting in which the entire iFSR comes together

- Barbeques

- Game Nights in the Department

- First Semester Introduction week

- Supportive work for department events such as the long night of sciences and the university day

...

iFSR
Fachschaftsrat Informatik

We want YOU!

iFSR

Fachschaftsrat Informatik