CONSTRUCTOR UNIVERSITY

Study Program Handbook

Integrated Social and Cognitive Psychology

Bachelor of Science

Subject-specific Examination Regulations for Integrated Social and Cognitive Psychology (Fachspezifische Prüfungsordnung)

The subject-specific examination regulations for Integrated Social and Cognitive Psychology are defined by this program handbook and are valid only in combination with the General Examination Regulations for Undergraduate degree programs (General Examination Regulations = Rahmenprüfungsordnung). This handbook also contains the program-specific Study and Examination Plan (Chapter 6).

Upon graduation, students in this program will receive a Bachelor of Science (BSc) degree with a scope of 180 ECTS (for specifics see Chapter 4 of this handbook).

Current version	**Valid as of**	**Decision**	**Details**
Fall 2024 – V1.1	Sept 01, 2024	Jan 15, 2025	Nonsubstantial Change: "Intercultural Training Academy" added as permanent ISCP specialization module
Fall 2024 – V1	Sept 01, 2024		
		Apr 26, 2023	Substantial change approved by the Academic Senate
		Jun 26, 2019	Originally approved by Academic Senate

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1 Program Overview

1.1 Concept

1.1.1 Constructor University Educational Concept

Constructor University aims to educate students for both an academic and a professional career by emphasizing three core objectives: academic excellence, personal development, and employability to succeed in the working world. Constructor University offers an excellent research driven education experience across disciplines to prepare students for graduate education as well as career success by combining disciplinary depth and interdisciplinary breadth with supplemental skills education and extra-curricular elements. Through a multi-disciplinary, holistic approach and exposure to cutting-edge technologies and challenges, Constructor University develops and enables the academic excellence, intellectual competences, societal engagement, professional and scientific skills of tomorrows leaders for a sustainable and peaceful future.

In this context, it is Constructor University's aim to educate talented young people from all over the world, regardless of nationality, religion, and material circumstances, to become citizens of the world who can take responsible roles for the democratic, peaceful, and sustainable development of the societies in which they live. This is achieved through high-quality teaching, manageable study loads and supportive study conditions. Study programs and related study abroad programs convey academic knowledge as well as the ability to interact positively with other individuals and groups in culturally diverse environments. The ability to succeed in the working world is a core objective for all study programs at Constructor University, both in terms of actual disciplinary subject matter and social skills and intercultural competence. Study-program-specific modules and additional specializations provide the necessary depth, interdisciplinary offerings and the minor option provide breadth while the university-wide general foundation and methods modules, optional German language and Humanities modules, and an extended internship period strengthen the employability of students. The concept of living and learning together on an international campus with many cultural and social activities supplements students' education. In addition, Constructor University offers professional advising and counseling.

Constructor University's educational concept is highly regarded both nationally and internationally. While the university has consistently achieved top marks over the last decade in Germany's most comprehensive and detailed university ranking by the Center for Higher Education (CHE), it has also been listed by one of the most widely observed university rankings, the Times Higher Education (THE) ranking. More details on the current ranking positions can be found at https://constructor.university/more/about-us.

1.1.2 Program Concept

The Constructor University BSc in Integrated Social and Cognitive Psychology (ISCP) is built on a multi-level approach. Studying human behavior at the level of the individual, group and the society and culture reflects the insight that individual behavior is constrained and shaped by factors that range from biological and psychological variables to socio-cultural contexts, such as, for instance, interpersonal, intergroup, and even intercultural relationships. These factors interact intricately to affect behavior. Our program focuses on equipping you with the skills to analyze, model, and eventually influence those multi-level interactions in ways that help individuals and groups attain positive outcomes, both performance-related (e.g., academic or job performance) and personal (e.g., subjective well-being, health

behavior). Consistent with the multi-level approach, our teaching explicitly addresses diversity as a defining feature of behaviors and interactions. It is therefore geared toward taking general explanations to the next level that apply across people and contexts. In addition to familiarizing you with a comprehensive range of theoretical perspectives on human behavior, the multi-level approach enables you to fruitfully combine those perspectives. This maximizes the explanatory and predictive power of any research approach or practice strategy. Also, it is aimed at analyzing and explaining human behavior in the complex contexts in which it unfolds, and to eventually enable and support behavior change in people and organizations alike.

The Constructor University BSc program in Integrated Social and Cognitive Psychology builds a solid foundation for graduates to pursue careers in a range of directions and, in particular, roles that contribute to developing, evaluating, and applying strategies for facing the challenges of diversifying societies. People live and work together in novel cultural and generational constellations, which creates countless opportunities for 'richer' social interactions and for learning from each other. It takes evidence-based strategies to reap the benefits of and to tackle the issues that may follow demographic diversity. In research, cognitive and social psychologists contribute to a solid evidence base that informs good diversity practices in numerous professional fields. In personnel executive roles, psychologists design diversity management strategies in the workplace. In marketing functions, psychologists advise companies on diversifying their product portfolios and advertising campaigns to meet increasingly diverse customer needs. In our program, you equip yourself with the essential knowledge and skills that will help you develop a career in any of those directions.

1.2 Specific Advantages of ISCP at Constructor University

Whether as a practitioner or researcher, acting competently and professionally requires specialist skills, competencies, and knowledge for which the ISCP Program lays a solid foundation. A thorough understanding of individual behavior in its social contexts requires in-depth knowledge of both the biological and psychological constraints that shape individual cognitions, behaviors, and personalities. Beyond teaching you that knowledge, we emphasize *using* that knowledge to model in detail the interplay of social contexts and individual behaviors that influence one another.

The program's focus on social psychology and cognitive psychology gives you particular opportunities to build comprehensive qualitative, quantitative, and experimental research skills. Thanks to our small classes, you will be able to work intensively with professors to gather first-hand experience of harnessing a wide array of research methods to study the ways in which people perceive their environments, themselves and others, and how the people behave, decide, develop, feel, interact, learn, and remember. Once you have acquired essential analytical and conceptual tools in the introductory modules, you will begin to apply them to your own research projects, thus turning mere knowledge into real skills, even for ambitious research projects.

Our program gets you to 'immerse' yourself in research and will help clarify your academic interests, strengths, and weaknesses. Additionally, the program will strengthen your knowledge and skills to attain your career goals. As social psychology and cognitive psychology were foundational for the development of modern psychology, shaping it through their seminal theories and models, the advanced skills and knowledge you acquire in our program will be assets for helping you working your way into any field related to this multi-faceted discipline.

We pay great attention to meeting the latest standards of outcomes-based education. All courses adhere to constructive alignment standards. Each course has clearly defined learning outcomes that all

students are intended to reach. Aligned with the intended outcomes, the teaching activities let you apply the knowledge and practice the skills defined in the intended outcomes. Assessments are also aligned with the overall learning outcomes and allow for competence-oriented exams. Therefore, you will have clear criteria for what to learn, how to learn it, and if you have learned it. Our instructors will help you make the most of learning and performance-related feedback and to keep track of your academic development.

In sum, consistent with our multi-level approach, you will learn both to analyze the biological, psychological, and social levels of the mind and behavior in detail and to keep the sight of the big picture by exploring how these levels relate to one another. This involves making connections with both the natural sciences (e.g., biology, biochemistry, neuroscience) and the social sciences (e.g., economics, political science, sociology). This thorough overview will help you

- explore which psychological topics and approaches your interests and talents best suited to;
- analyze from a psychological perspective the trends and challenges of a globalizing world;
- develop your skills at generating boundary-spanning ideas for research and practice;
- adopt a transdisciplinary perspective and collaborate with researchers in other disciplines;
- choose from and prepare for a broad range of master's programs.

1.3 Program-Specific Educational Aims

1.3.1 Qualification Aims

Psychologists work in a broad range of fields. Diverse as these fields may be, they have two things in common. First, high-quality professional practice is evidence-based. An in-depth understanding of how that evidence is obtained is therefore crucial for working competently and responsibly. Moreover, psychologists themselves contribute to generating such evidence. Second, in any job role, much of a psychologist's work will be about making informed decisions – whether designing the experimental treatment of a study or selecting a training program for a group of employees. Therefore, the Constructor University BSc in ISCP is designed to help you build the knowledge, competency, and skills it takes to make use of and contribute to psychology's evidence base, and to become a competent decision-maker.

This requires *psychological literacy, or* "being insightful and reflective about one's own and others' behaviour and mental processes" (McGovern et al, 2010, p. 11) in order to be able to apply psychological principles to individual, social, and organizational issues at work, in relationships, and the broader community. Against this backdrop, our program aims to provide an intellectual environment that allows you to develop into a respectfully critical scientific thinker, and an ethically and socially responsible member of your community. Specifically, the qualification aims of the Constructor University's BSc in ISCP are to:

- promote specialist capabilities in specific areas of psychology congruent with the research foci of Constructor University, supported by its stimulating and supportive environment that is enriched by research and current practice in psychology;
- enable you to build the academic and transferable skills that will prepare you confidently for employment, further study, or training for professional practice;
- enable you to help shape social processes through evidence-based practice and responsible, informed decisions.

1.3.2 Intended Learning Outcomes

By the end of the ISCP program, you will be able to demonstrate

academic and scientific proficiency, as well as employability skills by

1. explaining the inherent variability and diversity of psychological functioning and the implications of the latter for psychological theories and applications;
2. demonstrating a critical understanding of core conceptualizations of cognition and social interaction (e.g., connectionism, information processing approach, neuroscience approach, social-cognitive framework);
3. applying quantitative theories to design behavior modification interventions in applied settings (e.g., health care programs, personnel trainings) considering both personal variables (e.g., attitudes, beliefs) and contextual variables (e.g., peer and supervisor support);
4. critically discussing the relationship between qualitative (ideographic) and quantitative (nomothetic) research approaches and drawing implications for theory building and for the development of interventions in psychological practice;
5. developing theoretical accounts with increased explanatory power or predictive validity by combining different theories from different levels (e.g., neuroscience and social cognition perspectives);
6. designing and conducting experimental and non-experimental studies (that may include neuroscience methods), analyzing the data and discussing findings regarding the behavior and experiences of individuals and groups;
7. demonstrating basic knowledge of the ethical context of psychology (including legal and regulatory issues in the practice of psychology such as in internships) and designing your research in accordance with the codes of conduct set forth by professional bodies (e.g., APA);

personality development Skills by

8. displaying basic mindfulness and self-awareness and engaging in reflection regarding psychological practice;
9. articulating your values and expectations toward your learning and professional development and undertaking self-directed study to meet specified objectives;
10. adhering to professional values and recognizing situations that challenge adherence to those values;

competence for engagement in society by

11. reflecting on new technologies and innovations in psychology and making decisions regarding their legitimacy, reliability and effectiveness;
12. explaining the relationships between psychology and related sciences (e.g., biology, computer science, economics, sociology) and identifying avenues to collaborate and synergize;
13. communicating effectively and fluently research ideas and findings through written, oral, and visual means to other psychologists and to professionals from other disciplines;
14. articulating the role of psychologists as change agents and demonstrating knowledge of individual, institutional and systems-level barriers to change;
15. evaluating based on relevant psychological evidence the arguments in societal debates that pertain to diversity (e.g., demographic change, migration).

1.4 Career Options and Support

The BSc in Integrated Social and Cognitive Psychology at Constructor University opens doors for a professional career and lays the groundwork for an academic career, especially in an international context. You will be a strong candidate for junior positions in all jobs that require skills in analyzing, designing, or improving human interaction, presentation, and communication. Therefore, your career opportunities will be in fields such as advertising, counseling, diversity management health promotion, human resource management, intercultural relations, management consulting, market research, media, as well as applied research in companies, public institutions, and non-governmental organizations.

Moreover, you will be well prepared for international specialized Master programs in psychology and its neighboring fields, as well as for integrated, research-focused Master-PhD Programs.

Requirements to practice in psychology differ by country, and often even by state. Please check the requirements of the respective country or state. A degree in ISCP qualifies for entry into many accredited M.Sc. programs in the U.S., the UK and other countries that in turn are requirements for licensure in those countries. For details, please check the respective university webpages. Given its interdisciplinary focus, a degree in ISCP does not guarantee admission to general Master programs in Psychology or Psychotherapy at German universities and hence does not prepare for licensure as a Psychotherapist in Germany.

For more information, see the website of the German Society of Psychology at https://studium.dgps.de/ (site available in German only).

Graduates of the Psychology BA (former program of ISCP) have been admitted to renowned institutions such as:

- University of Exeter, Social Psychology, MSc
- University of Amsterdam; Cultural Psychology, MSc
- University of Groningen, Industrial and Organizational Psychology, MSc
- University of Heidelberg, Psychology, M.Sc.
- University of East Anglia, The Gut-Brain Axis in Ageing and Dementia, direct PhD
- Florida International University, Legal Psychology, direct PhD
- LMU München, Systemic Neurosciences, MSc
- Karolinska Institutet, Biomedicine, MSc
- King's College London, Terrorism, Security & Society, DWS, MA
- University of Aberdeen, Strategic Studies & Management, MSc
- Columbia University, Developmental Psychology, MA
- University of Cambridge, Biological Science (Psychology), MPhil
- University of Oxford, Psychological Research, MSc
- London School of Economics, Social and Cultural Psychology, MSc
- University College London, Mental Health Services, MSc

The Career Service Center (CSC) helps students in their career development. It provides students with high-quality training and coaching in CV creation, cover letter formulation, interview preparation, effective presenting, business etiquette, and employer research as well as in many other aspects, thus helping students identify and follow up on rewarding careers after graduating from Constructor University. Furthermore, the Alumni Office helps students establish a long-lasting and worldwide network which provides support when exploring job options in academia, industry, and elsewhere.

1.5 Admission Requirements

Admission to Constructor University is selective and based on a candidate's school and/or university achievements, recommendations, self-presentation, and performance on standardized tests. Students admitted to Constructor University demonstrate exceptional academic achievements, intellectual creativity, and the desire and motivation to make a difference in the world.

The following documents need to be submitted with the application:

- Recommendation Letter (optional)
- Official or certified copies of high school/university transcripts
- Educational History Form
- Standardized test results (SAT/ACT) if applicable
- Motivation statement
- ZeeMee electronic resume (optional)
- Language proficiency test results (TOEFL Score: 90, IELTS: Level 6.5 or equivalent)

Formal admission requirements are subject to higher education law and are outlined in the Admission and Enrollment Policy of Constructor University.

For more detailed information about the admission visit: https://constructor.university/admission-aid/application-information-undergraduate

1.6 More information and contacts

For more information on the study program please contact the Study Program Coordinator:

Prof. Dr. Song Yan
Professor of Psychology

Email: syan@constructor.university

or visit our program website: https://constructor.university/programs/undergraduate-education/integrated-social-cognitive-psychology

For more information on Student Services please visit:

https://constructor.university/student-life/student-services

2 The Curricular Structure

2.1 General

The curricular structure provides multiple elements for enhancing employability, interdisciplinarity, and internationality. The unique Constructor Track, offered across all undergraduate study programs, provides comprehensive tailor-made modules designed to achieve and foster career competency. Additionally, a mandatory internship of at least two months after the second year of study and the possibility to study abroad for one semester give students the opportunity to gain insight into the professional world, apply their intercultural competences and reflect on their roles and ambitions for employment and in a globalized society.

All undergraduate programs at Constructor University are based on a coherently modularized structure, which provides students with an extensive and flexible choice of study plans to meet the educational aims of their major as well as minor study interests and complete their studies within the regular period.

The framework policies and procedures regulating undergraduate study programs at Constructor University can be found on the website

(https://constructor.university/student-life/student-services/university-policies).

2.2 The Constructor University 4C Model

Constructor University offers study programs that comply with the regulations of the European Higher Education Area. All study programs are structured according to the European Credit Transfer System (ECTS), which facilitates credit transfer between academic institutions. The three-year undergraduate programs involve six semesters of study with a total of 180 ECTS credit points (CP). The undergraduate curricular structure follows an innovative and student-centered modularization scheme, the 4C Model. It groups the disciplinary content of the study program in three overarching themes, CHOICE-CORE-CAREER according to the year of study, while the university-wide CONSTRUCTOR Track is dedicated to multidisciplinary content dedicated to methods as well as intellectual skills and is integrated across all three years of study. The default module size is 5 CP, with smaller 2.5 CP modules being possible as justified exceptions, e.g., if the learning goals are more suitable for 2.5 CP and the overall student workload is balanced.

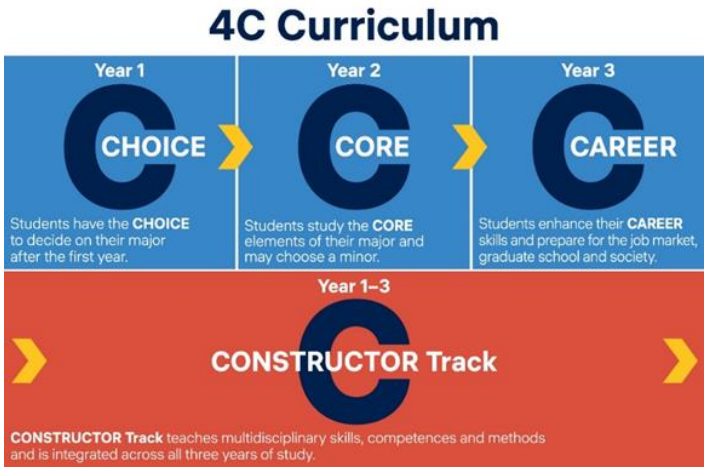

Figure 1: The Constructor University 4C-Model

2.2.1 Year 1 – CHOICE

The first study year is characterized by a university-specific offering of disciplinary education that builds on and expands upon the students' entrance qualifications. Students select introductory modules for a total of 45 CP from the CHOICE area of a variety of study programs, of which 15-45 CP will belong to their intended major. A unique feature of our curriculum structure allows students to select their major freely upon entering Constructor University. The team of Academic Advising Services offers curriculum counseling to all Bachelor students independently of their major, while Academic Advisors, in their capacity as contact persons from the faculty, support students individually in deciding on their major study program. To pursue ISCP as a major, students need to take the following CHOICE modules (15 CP) as mandatory (m) modules:

- CHOICE Module: Essentials of Cognitive Psychology (m, 7.5 CP)
- CHOICE Module: Essentials of Social Psychology (m, 7.5 CP)

The *Essentials of Cognitive Psychology* module establishes a general framework for human cognition in which the many phenomena of associated with thinking, interaction, and communication can be analyzed and predicted. Attention, perception, learning, and memory will be some of the topics addressed in the first semester, as well as intelligence, language, emotion, motivation, and personality. This module covers the historical foundations of psychology, influential and current theories and models, as well as empirical research methods. The module also includes methods for critical thinking (evaluating current approaches and research results); the scientific cycle including basics of theory of science.

In the *Essentials of Social Psychology* module, you will deal with the influence that the actual or perceived presence of others can have on people's behavior and analyze how individual experience is embedded in different contexts at different levels of complexity, from immediate social situations, and institutions, to cultural meaning systems. This module will increase your insight into recent developments in social psychology, as well as help you acquire a broad and thorough understanding of the most important topics in social psychological research today.

Students can select the remaining CHOICE modules (30 CP) in their first year of studies according to their interests or with the intention to change their major until the beginning of the second year, when the major choice becomes fixed.

Students can still change to another major at the beginning of their second year of studies, provided they have taken the corresponding mandatory CHOICE modules in their first year of studies. All students must participate in an entry advising session with their Academic Advisors to learn about their major change options and consult their Academic Advisor during the first year of studies prior to changing their major.

ISCP students that would like to retain an option for a major change are strongly recommended to register for the CHOICE modules of one of the following study programs in their first year. The module descriptions can be found in the respective Study Program Handbook.

- Global Economics and Management (GEM)
  CHOICE Module: Microeconomics (m, 7.5 CP)
  CHOICE Module: Macroeconomics (m, 7.5 CP)
  CHOICE Module: Introduction to International Business (m, 7.5 CP)

CHOICE Module: Introduction to Finance and Accounting (m, 7.5 CP)

- International Business Administration (IBA)
  CHOICE Module: Microeconomics (m, 7.5 CP)
  CHOICE Module: Macroeconomics (m, 7.5 CP)
  CHOICE Module: Introduction to International Business (m, 7.5 CP)
  CHOICE Module: Introduction to Finance and Accounting (m, 7.5 CP)

- International Relations: Politics and History (IRPH)
  CHOICE Module: Introduction to International Relations Theory (m, 7.5 CP)
  CHOICE Module: Introduction to Modern European History (m, 7.5 CP)

- Biochemistry and Cell Biology (BCCB)
  CHOICE Module: General Biochemistry (m, 7.5 CP)
  CHOICE Module: General Cell Biology (m, 7.5 CP)
  CHOICE Module: General and Inorganic Chemistry (m, 7.5 CP)
  CHOICE Module: General Organic Chemistry (m, 7.5 CP)

- Medicinal Chemistry and Chemical Biology (MCCB)
  CHOICE Module: General Medicinal Chemistry and Chemical Biology (m, 7.5 CP)
  CHOICE Module: General Organic Chemistry (m, 7.5 CP)
  CHOICE Module: General Biochemistry (m, 7.5 CP)
  CHOICE Module: General Cell Biology (m, 7.5 CP)

- Chemistry and Biotechnology (CBT)
  CHOICE Module: General and Inorganic Chemistry (m, 7.5 CP)
  CHOICE Module: General Organic Chemistry (m, 7.5 CP)
  CHOICE Module: General Biochemistry: Microbiology and Genetics (m, 7.5 CP)
  CHOICE Module: Introduction to Biotechnology (m, 7.5 CP)

- Computer Science (CS)
  CHOICE Module: Programming in C and C++ (m, 7.5 CP)
  CHOICE Module: Algorithms and Data Structures (m, 7.5 CP)
  CHOICE Module: Mathematical Foundations of Computer Science (m, 7.5 CP)
  CHOICE Module: Digital Systems and Computer Architecture (m, 7.5 CP)

- Industrial Engineering and Management (IEM)
  CHOICE Module: General Industrial Engineering (m, 7.5 CP)
  CHOICE Module: General Logistics (m, 7.5 CP)
  CHOICE Module: Introduction to International Business (m, 7.5 CP)
  CHOICE Module: Introduction to Finance and Accounting (m, 7.5 CP)

- Management, Decisions and Data Analytics (MDDA)
  CHOICE Module: Introduction to International Business (m, 7.5 CP)
  CHOICE Module: Introduction to Finance and Accounting (m, 7.5 CP)
  CHOICE Module: Introduction to Data Science (m, 7.5 CP)
  CHOICE Module: Data Structures and Processing (m, 7.5 CP)

To allow further major changes after the first semester the students are strongly recommended to register for the CHOICE modules of one of the following study programs:

- Physics and Data Science (PHDS)
  CHOICE Module: Classical Physics (m, 7.5 CP)
  CHOICE Module: Scientific Programming with Python (m, 7.5 CP)
  CHOICE Module: Modern Physics (m, 7.5 CP)
  CHOICE Module: Mathematical Modeling (m, 7.5 CP)

- Mathematics, Modeling and Data Analytics (MMDA)
  CHOICE Module: Analysis (m, 7.5 CP)
  CHOICE Module: Scientific Programming with Python (m, 7.5 CP)
  CHOICE Module: Linear Algebra (m, 7.5 CP)
  CHOICE Module: Mathematical Modelling (m, 7.5 CP)

- Software, Data and Technology (SDT)
  CHOICE Module: Programming in C and C++ (m, 7.5 CP)
  CHOICE Module: Mathematical Foundations of Computer Science (m, 7.5 CP)
  CHOICE Module: Core Algorithms and Data Structures (m, 7.5 CP)
  CHOICE Module: Development in JVM Languages (m, 7.5 CP

2.2.2 Year 2 – CORE

In their second year, students take a total of 45 CP from a selection of in-depth, discipline-specific CORE modules. Building on the introductory CHOICE modules and applying the methods and skills acquired so far (see 2.3.1), these modules aim to expand the students' critical understanding of the key theories, principles, and methods in their major for the current state of knowledge and best practice.

To pursue ISCP as a major, at least 30 CP from the following mandatory elective (me) CORE modules need to be taken:

- CORE Module: Learning and Memory (me, 5 CP)
- CORE Module: Social Cognition (me, 5 CP)
- CORE Module: Organizational Psychology & Communication (me, 5 CP)
- CORE Module: Neurobiology of Behavior (me, 5 CP)
- CORE Module: Neuroscience Methods (me, 5 CP)
- CORE Module: Attention, Sensation, and Perception (me, 5 CP)
- CORE Module: Judgment & Decision Making (me, 5 CP)
- CORE Module: Health Psychology (me, 5 CP)
- CORE Module: Cultural Psychology (me, 5 CP)

The remaining 15 CP can be selected according to interest and/or with the aim of pursuing a minor in a second field of studies, or students complement their studies by taking all of the above listed mandatory elective CORE modules.

The Learning and Memory module is geared toward understanding how information is stored and retrieved, why we forget, and whether we can improve memory. In the Neurobiology of Behavior module, students will acquire knowledge about basic brain structures and how they contribute to cognitive

processing and social interactions, and how neuropsychologists arrive at their insights in the Neuroscience Methods module. In the Attention, Sensation and Perception module, students learn how humans perceive the world through their senses; how (and why) perceptions deviate from the physical world; how attention shapes perception; and how all this can be investigated through psychophysical methods.

In the Social Cognition module, students will take an in-depth look – from the lab to the 'real world' – at the role of the actual or imagined presence of others. Students will also look at culture as one of the less obvious drivers in the Cultural Psychology module, analyzing why people from different corners of the world perceive the same things in very different manners. In the Organizational Psychology and Communication module, students will adopt a social cognition perspective in the study of behavior in organizations, as well as of the fundamental processes of (non-)verbal communication and interaction.

The Judgment & Decision Making module teaches students how humans make judgments about (uncertain) events, decisions that do or do not involve uncertainty, and how and why they deviate from normative (rational) decisions. As a practical application, students will learn how to conduct a decision analysis.

Students will learn to apply and to design models for health, behavior change, stress development and management in the Health Psychology module by focusing on the interaction between biology, health, and behaviors.

ISCP students can take CORE modules (or more advanced Specialization modules) from a second discipline, which allows them to incorporate a minor study track into their undergraduate education, within the 180 CP required for a bachelor's degree. The educational aims of a minor are to broaden the students' knowledge and skills, support the critical reflection of statements in complex contexts, foster an interdisciplinary approach to problem-solving, and to develop an individual academic and professional profile in line with students' strengths and interests. This extra qualification will be highlighted in the transcript.

The Academic Advising Coordinator, Academic Advisor, and the Study Program Chair of the minor study program support students in the realization of their minor selection; the consultation with the Academic Advisor is mandatory when choosing a minor.

As a rule, this requires ISCP students to:

- select two CHOICE modules (15 CP) from the desired minor program in the first year and
- substitute 15 CP of mandatory elective ISCP CORE modules in the second year with the default minor CORE modules of the minor study program.

The requirements for the specific minors are described in the handbook of the study program offering the minor (Chapter 3.2) and are marked in the respective Study and Examination Plans. For an overview of accessible minors, please check the Major/Minor Combination Matrix which is published at the beginning of each academic year.

2.2.3 Year 3 – CAREER

During their third year, students prepare and make decisions for their career after graduation. To explore available choices fitting individual interests, and to gain professional experience, students take a mandatory summer internship (see 2.2.3.1). The third year of studies allows ISCP students to further sharpen their profile with a selection of discipline-specific, research-oriented specialization modules

that can be combined to enhance their individual competences in the natural sciences, strategy development for novel research approaches or managerial capabilities. Furthermore, the third year also focuses on the responsibility of students beyond their discipline (see CONSTRUCTOR Track).

The fifth semester also opens a mobility window for a diverse range of study abroad options. Finally, the sixth semester is dedicated to fostering the students' research experience by involving them in a Bachelor thesis project.

2.2.3.1 Internship / Start-up and Career Skills Module

As a core element of Constructor University's employability approach students are required to engage in a mandatory two-month internship of 15 CP that will usually be completed during the summer between the second and third years of study. This gives students the opportunity to gain first-hand practical experience in a professional environment, apply their knowledge and understanding in a professional context, reflect on the relevance of their major to employment and society, reflect on their own role in employment and society, and find a professional orientation. The internship can also establish valuable contacts for the students' Bachelor's thesis project, for the selection of a Master program graduate school or further employment after graduation. This module is complemented by career advising and several career skills workshops throughout all six semesters that prepare students for the transition from student life to professional life. As an alternative to the full-time internship, students interested in setting up their own company can apply for a start-up option to focus on developing of their business plans.

For further information, please contact the Career Services Center (https://constructor.university/student-life/career-services).

2.2.3.2 Specialization Modules

In the third year of their studies, students take 15 CP from major-specific or major-related, advanced Specialization Modules to consolidate their knowledge and to be exposed to state-of-the-art research in the areas of their interest. This curricular component is offered as a portfolio of modules, from which students can make free selections during their fifth and sixth semester. The default Specialization Module size is 5 CP, with smaller 2.5 CP modules being possible as justified exceptions.

To pursue ISCP as a major, 15 CP from the following major-specific Specialization Modules need to be taken:

- ISCP Specialization: Human Neuroscience Advanced Lab (Intersession) (me, 2.5 CP)
- ISCP Specialization: Abnormal and Clinical Psychology (me, 2.5 CP)
- ISCP Specialization: Managing Demographic Change in Organizations (me, 2.5 CP)
- ISCP Specialization: Psychology of digital Interventions (me, 2.5 CP)
- ISCP Specialization: The Science of Happiness (me, 5 CP)

The specialization modules are intended to let you apply the general psychological skills you acquired during your first two years of study to specific fields of empirical research or professional practice in order to expand and refine those skills and to foster self-reflection on your career perspectives. In order to provide you with ample opportunity to apply your skills and to reflect the broad range of subfields in psychology, we offer specialization modules of 2.5 CP in addition to the 5 CP default size.

As defined by the specific needs for action in a given field, you will familiarize with and acquire new and advanced methods of problem analysis, data collection and analysis, and problem-solving. The

modules in application-oriented fields (e.g., Managing demographic change in organizations) may also focus on exploring additional professional skills (e.g., Conflict management) and specific career profiles.

The respective modules are listed in Chapter 7.

2.2.3.3 Study Abroad

Students have the opportunity to study abroad for a semester to extend their knowledge and abilities, broaden their horizons and reflect on their values and behavior in a different context as well as on their role in a global society. For a semester abroad (usually the 5th semester), modules related to the major with a workload equivalent to 22.5 CP must be completed. Modules recognized as study abroad CP need to be pre-approved according to Constructor University study abroad procedures. Several exchange programs allow students to directly enroll at prestigious partner institutions worldwide. Constructor University's participation in Erasmus+, the European Union's exchange program, provides an exchange semester at a number of European universities that include Erasmus study abroad funding.

For further information, please contact the International Office

(https://constructor.university/ student-life/study-abroad/international-office).

ISCP students that wish to pursue a study abroad in their fifth semester are required to select their modules at the study abroad partners such that they can be used to substitute between 10-15 CP of major-specific Specialization modules and between 5-15 CP of modules equivalent to the non-disciplinary New Skills modules (see CONSTRUCTOR Track). In their sixth semester, according to the study plan, returning study-abroad students complete the Bachelor Thesis/Seminar module (see next section), they take any missing Specialization modules to reach the required 15 CP in this area, and they take any missing New Skills modules to reach 15 CP in this area.

2.2.3.4 Bachelor Thesis/Seminar Module

This module is a mandatory graduation requirement for all undergraduate students. It consists of two module components in the major study program guided by a Constructor University faculty member: the Bachelor Thesis (12 CP) and a Seminar (3 CP). The title of the thesis will appear on the students' transcripts.

Within this module, students apply the knowledge skills, and methods they have acquired in their major discipline to become acquainted with actual research topics, ranging from the identification of suitable (short-term) research projects, preparatory literature searches, the realization of discipline-specific research, and the documentation, discussion, and interpretation of the results.

With their Bachelor Thesis students demonstrate mastery of the contents and methods of their major-specific research field. Furthermore, students show the ability to analyze and solve a well-defined problem with scientific approaches, a critical reflection of the status quo in scientific literature, and the original development of their own ideas. With the permission of a Constructor University Faculty Supervisor, the Bachelor Thesis can also have an interdisciplinary nature. In the seminar, students present and discuss their theses in a course environment and reflect on their theoretical or experimental approach and conduct. They learn to present their chosen research topics concisely and comprehensively in front of an audience and to explain their methods, solutions, and results to both specialists and non-specialists.

2.3 The CONSTRUCTOR Track

The CONSTRUCTOR Track is another important feature of Constructor University's educational model. The Constructor Track runs orthogonal to the disciplinary CHOICE, CORE, and CAREER modules across all study years and is an integral part of all undergraduate study programs. It provides an intellectual tool kit for lifelong learning and encourages the use of diverse methodologies to approach cross-disciplinary problems. The CONSTRUCTOR track contains Methods, New Skills and German Language and Humanities modules.

2.3.1 Methods Modules

Methods such as mathematics, statistics, programming, data handling, presentation skills, academic writing, and scientific and experimental skills are offered to all students as part of the Methods and Skills area in their curriculum. The modules that are specifically assigned to each study programs equip students with transferable academic skills. They convey and practice specific methods that are indispensable for each students' chosen study program. Students are required to take 20 CP in the Methods and Skills area. The size of all Methods modules is 5 CP.

To pursue ISCP as major, the following Methods modules (20 CP) need to be taken as mandatory modules:

- Methods Module: Academic Writing and Academic Skills (m, 5 CP)
- Methods Module: Applied Statistics with R (m, 5CP)
- Methods Module: Qualitative Research Methods (m, 5CP)
- Methods Module: Data Collection and Empirical Research Methodologies (m, 5CP)

2.3.2 New Skills Modules

This part of the curriculum constitutes an intellectual and conceptual tool kit that cultivates the capacity for a particular set of intellectual dispositions including curiosity, imagination, critical thought, and transferability. It nurtures a range of individual and societal capacities, such as self-reflection, argumentation and communication. Finally, it introduces students to the normative aspects of inquiry and research, including the norms governing sourcing, sharing, withholding materials and research results as well as others governing the responsibilities of expertise as well as the professional point of view.

All students are required to take the following modules in their second year:

- New Skills Module: Logic (m, 2.5 CP)
- New Skills Module: Causation and Correlation (m, 2.5 CP).

These modules will be offered with two different perspectives of which the students can choose. The module perspectives are independent modules which examine the topic from different point of views. Please see the module description for more details.

In the third year, students take three 5 CP modules that build upon previous modules in the track and are partially constituted by modules that are more closely linked to each student's disciplinary field of study. The following module is mandatory for all students:

- New Skills Module: Argumentation, Data Visualization and Communication (m, 5 CP).

This module will also be offered with two different perspectives of which the students can choose.

In their fifth semester, students may choose between:

- New Skills Module: Linear Model/Matrices (me, 5 CP) and
- New Skills Module: Complex Problem Solving (me, 5 CP).

The sixth semester also contains the choice between two modules, namely:

- New Skills Module: Agency, Leadership and Accountability (me, 5 CP) and
- New Skills Module: Community Impact Project (me, 5 CP).

Students who study abroad during the fifth semester and are not substituting the mandatory Argumentation, Data Visualization and Communication module, are required to take this module during their sixth semester. Students who remain on campus are free to take the Argumentation, Data Visualization and Communication module in person in either the fifth or sixth semester as they prefer.

2.3.3 German Language and Humanities Modules

German language abilities foster students' intercultural awareness and enhance their employability in their host country. They are also beneficial for securing mandatory internships (between the 2nd and 3rd year) in German companies and academic institutions. Constructor University supports its students in acquiring basic as well as advanced German skills in the first year of the Constructor Track. Non-native speakers of German are encouraged to take two German modules (2.5 CP each), but are not obliged to do so. Native speakers and other students not taking advantage of this offering take alternative modules in Humanities in each of the first two semesters:

- Humanities Module: Introduction to Philosophical Ethics (me, 2.5 CP)
- Humanities Module: Introduction to the Philosophy of Science (me, 2.5 CP)
- Humanities Module: Introduction to Visual Culture (me, 2.5 CP)

3 Cognitive Psychology as a Minor

The minor in Cognitive Psychology is an asset in any field that requires significant interaction with people and is a great way to make you more attractive to employers. Students with a major in Biology (BCCB), Business (GEM, IBA), Computer Science (CS), or Industrial Engineering and Management (IEM) may find an ISCP minor to be particularly relevant. They can expect to glean from the ISCP minor and apply to their own fields:

- an appreciation for the variety of influences on human behavior;
- an understanding of psychological research and the applications of psychology;
- insight into human reasoning and decision making;
- interpersonal skills, including cross-cultural understanding; and
- increased critical thinking skills.

3.1 Qualification Aims

The Cognitive Psychology minor is designed to let you build your basic *psychological literacy,* i.e. by being insightful and reflective about your own and others' behavior and mental processes, you will be able to understand which psychological principles govern social interactions in relationships, the workplace, and in society. The intellectually stimulating environment of the minor will support the development of your skills as a respectfully critical scientific thinker and an ethically and socially responsible member of your community. Insights into research and current practice in psychology will enable you to build both academic and transferable skills that contribute to your employability, further study, or training for professional practice.

3.1.1 Intended Learning Outcomes

With a minor in Cognitive Psychology students will be able to:

1. describe the inherent variability and diversity of psychological functioning and the selected implications of the latter for psychological theories and applications;
2. demonstrate a critical understanding of core conceptualizations of cognition and social interaction (e.g., connectionism, information processing approach, neuroscience approach, social-cognitive framework);
3. explain how theories from different levels (e.g., neuroscience and social cognition perspectives) may be combined into theoretical accounts with increased explanatory power or predictive validity;
4. demonstrate basic knowledge of the ethical context of psychology including legal and regulatory issues in the practice of psychology (e.g., in internships);
5. explain the relationships between psychology and related sciences (e.g., biology, computer science, economics, sociology) and describe avenues to collaboration and synergies;
6. and articulate the role of psychologists as agents of change agents and demonstrate knowledge of the individual, institutional, and systems-level barriers to change.

3.2 Module Requirements

A minor in Cognitive Psychology requires 30 CP and includes the following CHOICE and CORE modules:

- CHOICE Module: Essentials of Cognitive Psychology (m, 7.5 CP)
- CHOICE Module: Essentials of Social Psychology (m, 7.5 CP)
- CORE Module: Learning and Memory (m, 5 CP)
- CORE Module: Attention, Sensation & Perception (m, 5 CP)
- CORE Module: Neurobiology of Behavior (m, 5 CP)

3.3 Degree

After successful completion, the minor in Cognitive Psychology will be listed on the final transcript under PROGRAM OF STUDY and BA/BSc – [name of the major] as “Minor: Cognitive Psychology”.

4 ISCP Undergraduate Program Regulations

4.1 Scope of these Regulations

The regulations in this handbook are valid for all students who entered the Integrated Social and Cognitive ISCP undergraduate program at Constructor University in Fall 2024. In case of conflict between the regulations in this handbook and the general Policies for Bachelor Studies, the latter applies (see https://constructor.university/student-life/student-services/university-policies).

In exceptional cases, certain necessary deviations from the regulations of this study handbook might occur during the course of study (e.g., change of the semester sequence, assessment type, or the teaching mode of courses).

In general, Constructor University reserves therefore the right to change or modify the regulations of the program handbook according to relevant policies and processes also after its publication at any time and in its sole discretion.

4.2 Degree

Upon successful completion of the study program, students are awarded a Bachelor of Science degree in Integrated Social and Cognitive Psychology.

4.3 Graduation Requirements

In order to graduate, students need to obtain 180 CP. In addition, the following graduation requirements apply:

Students need to complete all mandatory components of the program as indicated in the study and examination plan in Chapter 6 of this handbook.

5 Schematic Study Plan for ISCP

Figure 2 shows schematically the sequence and types of modules required for the study program. A more detailed description, including the assessment types, is given in the Study and Examination Plan in the following section.

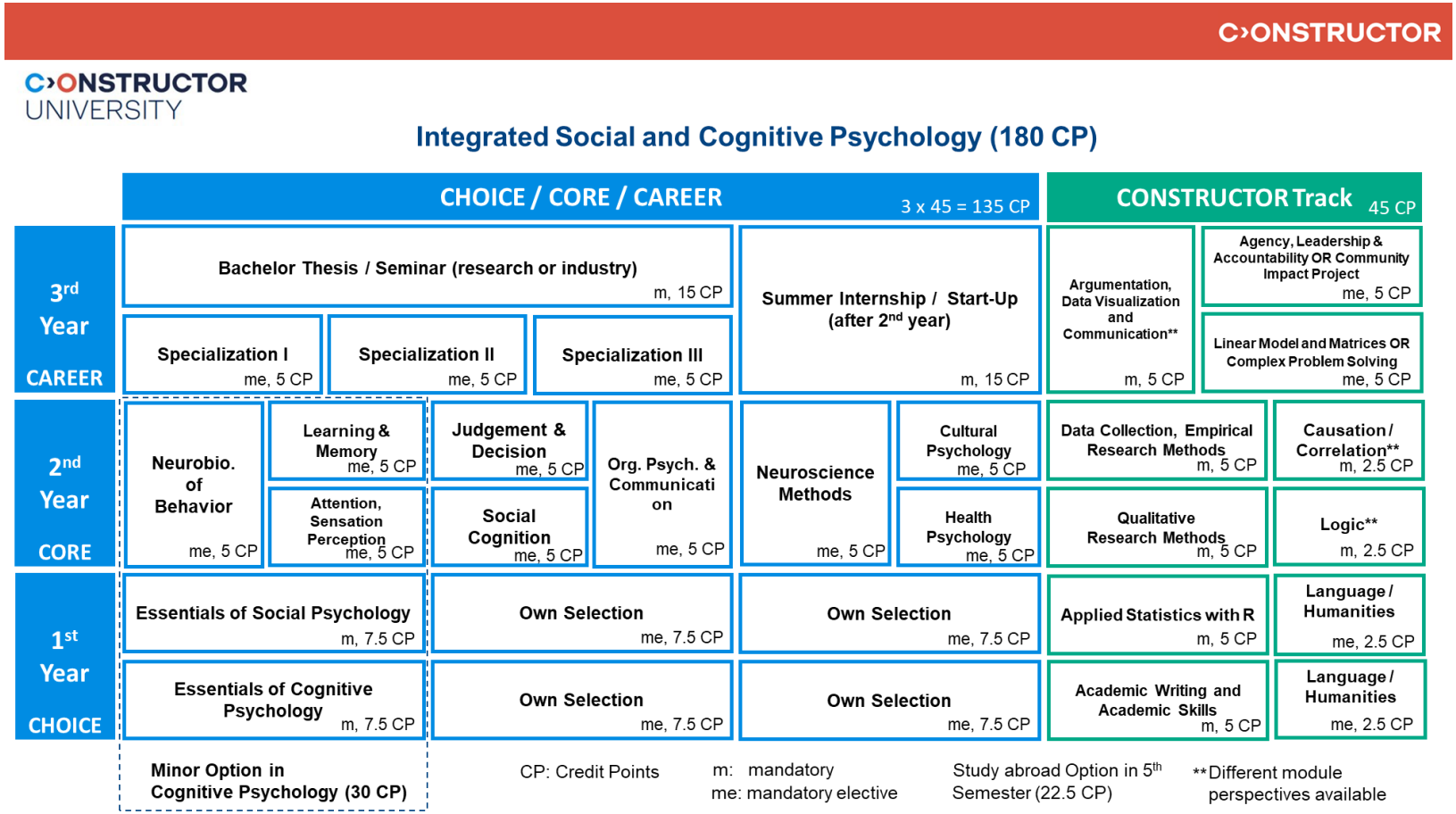

Figure 2: Schematic Study Plan ISCP

6 Study and Examination Plan

Integrated Social and Cognitive Psychology BSc

Matriculation Fall 2024

	Program-Specific Modules	Type	Assessment	Period	Status[1]	Sem.	CP
Year 1 - CHOICE							**45**
Take the mandatory CHOICE modules listed below							
	Unit: Introduction to Psychology (default minor)						**15**
CH-340	**Module: Essentials of Cognitive Psychology** (default minor)				**m**	**1**	**7.5**
CH-340-A	Essentials of Cognitive Psychology	Lecture	Written examination	Examination period			
CH-341	**Module: Essentials of Social Psychology** (default minor)				**m**	**2**	**7.5**
CH-341-A	Essentials of Social Psychology	Lecture	Written examination	Examination period			
	Unit: CHOICE (own selection)					**1/2**	**30**
Take four further CHOICE modules from those offered for all other study programs.[2]							
Year 2 - CORE							**45**
Take all CORE modules listed below or replace 15 CP with suitable CORE modules from other study programs[2]							
	Unit: Human Behavior in Social-Cognitive Context						**15**
CO-680	**Module: Learning and Memory** (default minor)				**me**	**4**	**5**
CO-680-A	Learning & Memory	Seminar	Written examination	Examination period			2.5
CO-680-B	Learning & Memory Lab	Lab	Project report	Examination period			2.5
CO-681	**Module: Social Cognition**				**me**	**3**	**5**
CO-681-A	Social Cognition	Seminar	Term paper	Examination period			2.5
CO-681-B	Social Cognition Lab	Lab	Laboratory report				2.5
CO-682	**Module: Organizational Psychology & Communication**				**me**	**3/4**	**5**
CO-682-A	Organizational Psychology	Seminar	Written examination	Examination period		4	2.5
CO-682-B	Communication and Interaction	Seminar	Written examination	Examination period		3	2.5
	Unit: A neuro-cognitive perspective on behavior						**15**
CO-683	**Module: Neurobiology of Behavior** (default minor)				**me**	**3/4**	**5**
CO-683-A	Neurobiology of Behavior I	Lecture	Written examination	Examination period		3	2.5
CO-683-B	Neurobiology of Behavior II	Lecture				4	2.5
CO-684	**Module: Neuroscience Methods**				**me**	**3/4**	**5**
CO-684-A	Neuroscience Methods	Seminar	Term paper	During the semester		4	2.5
CO-684-B	Neuroscience Lab	Lab	Laboratory report	Examination period		3	2.5
CO-685	**Module: Attention, Sensation, & Perception** (default minor)				**me**	**3**	**5**
CO-685-A	Attention, Sensation & Perception	Seminar	Laboratory report	Examination period			2.5
CO-685-B	Attention, Sensation & Perception Lab	Lab					2.5
	Unit: Applied Social and Cognitive Psychology						**15**
CO-686	**Module: Judgment & Decision Making**				**me**	**4**	**5**
CO-686-A	Judgment & Decision Making	Seminar	Written examination	Examination period			
CO-687	**Module: Health Psychology**				**me**	**3**	**5**
CO-687-A	Health Psychology	Seminar	Written examination	Examination period			2.5
CO-687-B	Health Psychology Lab	Lab					2.5
CO-688	**Module: Cultural Psychology**				**me**	**4**	**5**
CO-688-A	Culture & Cognition	Seminar	Written examination	Examination period			2.5
CO-688-B	Cultural Psychology Lab	Lab	Laboratory report	Examination period			2.5

	Constructor Track Modules (General Education)	Type	Assessment	Period	Status[1]	Sem.	CP
							15
	Unit: Methods / Skills						**10**
CTMS-MET-01	**Module: Academic Writing and Academic Skills**				**m**	**1**	**5**
CTMS-01	Academic Writing and Academic Skills	Lecture/Tutorial	Term paper	Examination period			
CTMS-MET-03	**Module: Applied Statistics with R**				**m**	**2**	**5**
CTMS-03	Applied Statistics with R	Lecture & Lab	Written examination	Examination period			
	Unit: German Language and Humanities (choose one module for each sememster)				**m**		**5**
German is default language and open to Non-German speakers (on campus and online).[4]							
CTLA-	**Module: Language 1**				**me**	**1**	**2,5**
CTLA-	Language 1	Seminar	Various	Various			
CTLA-	**Module: Language 2**				**me**	**2**	**2,5**
CTLA-	Language 2	Seminar	Various	Various			
CTHU-HUM-001	**Humanities Module: Introduction into Philosophical Ethics**				**me**	**2**	**2,5**
CTHU-001	Introduction into Philosophical Ethics	Lecture (online)	Written examination	Examination period			
CTHU-HUM-002	**Humanities Module: Introduction to the Philosophy of Science**				**me**	**1**	**2,5**
CTHU-002	Introduction to the Philosophy of Science	Lecture (online)	Written examination	Examination period			
CTHU-HUM-003	**Humanities Module: Introduction to Visual Culture**				**me**	**2**	**2,5**
CTHU-003	Introduction to Visual Culture	Lecture (online)	Written examination	Examination period			
							15
	Unit: Methods						**10**
CTMS-MET-04	**Module: Qualitative Research Methods**				**m**	**3**	**5**
CTMS-04	Qualitative Research Methods	Lecture	Project report	Examination period			
CTMS-MET-06	**Module: Data Collection and Empirical Research Methodologies**				**m**	**4**	**5**
CTMS-06	Data Collection and Empirical Research Methodologies	Lecture	Term paper	Examination period			
	Unit: New Skills						**5**
Choose one of the two modules							
CTNS-NSK- 01	**Module: Logic (perspective I)**				**me**	**3**	**2,5**
CTNS-01	Logic (perspective I)	Lecture (online)	Written Examination	Examination period			
CTNS-NSK-02	**Module: Logic (perspective II)**				**me**		**2,5**
CTNS-02	Logic (perspective II)	Lecture (online)	Written Examination	Examination period			
Choose one of the two modules							
CTNS-NSK-03	**Module: Causation and Correlation (perspective I)**				**me**	**4**	**2,5**
CTNS-03	Causation and Correlation (perspective I)	Lecture (online)	Written Examination	Examination period			
CTNS-NSK-04	**Module: Causation and Correlation (perspective II)**				**me**	**4**	**2,5**
CTNS-04	Causation and Correlation (perspective II)	Lecture (online)	Written Examination	Examination period			
Choose one of the two modules							

Year 3 - CAREER							45
CA-INT-900	**Module: Internship / Start-up and Career Skills**				**m**	**4/5**	**15**
CA-INT-900-0	Internship / Start-up and Career Skills	Internship	Project Report	During the 5th semester			
Module Code	**Module: Thesis / Seminar Psychology**				**m**	**6**	**15**
CA-ISCP-800-T	Thesis Psychology	Thesis	Thesis	15th of May			12
CA-ISCP-800-S	Thesis Seminar Psychology	Seminar	Presentation	During the semester			3
	Unit: Specialization				**m**		**15**
Take a total of 15 CP of specialization modules							
CA-S-ISCP-801	Human Neuroscience Advanced Lab (Intersession)	Lab/Seminar	Laboratory report	Examination period	me	5	2.5
CA-ISCP-807	Abnormal and Clinical Psychology	Seminar	Written Examination	Examination period	me	6	2.5
CA-S-ISCP-803	Managing Demographic Change in Organizations	Seminar	Presentation	During the semester	me	6	2.5
CA-S-ISCP-805	The Science of Happiness	Seminar	Project assessment and presentation	During the semester	me	6	5
CA-S-ISCP-806	Psychology of Digital Interventions	Lab	Presentation	During the semester	me	5	2.5
CA-S-ISCP-910	Intercultural Trainer Academy	Seminar	Term paper	During the semester	me		5

	Unit: New Skills							**15**
Choose one of the two modules								
CTNS-NSK-05xxxx	**Module: Linear Model and Matrices**					**me**	**5**	**5**
CTNS-05	Linear Model and Matrices	Seminar	Written examination	Examination period				
CTNS-NSK-06	**Module: Complex Problem Solving**					**me**	**5**	**5**
CTNS-06	Complex Problem Solving	Lecture (online)	Written examination	Examination period				
Choose one of the two modules								
CTNS-NSK-07	**Module: Argumentation, Data Visualization and Communication**					**me**	**5/6**	**5**
CTNS-07	Argumentation, Data Visualization and Communication (perspective I)	Lecture (online)	Written examination	Examination period			**5**	
CTNS-NSK-08	**Module: Argumentation, Data Visualization and Communication**					**me**	**5/6**	**5**
CTNS-08	Argumentation, Data Visualization and Communication (perspective II)	Lecture (online)		Examination period			**6**	
Choose one of the two modules								
CTNS-NSK-09	**Module: Agency, Accountability and Leadership**					**me**	**6**	**5**
CTNS-09	Agency, Accountability and Leadership	Lecture (online)	Written examination	Examination period				
CTNS-CIP-10	**Module: Community Impact Project**					**me**	**5/6**	**5**
CTNS-10	Community Impact Project	Project	Project Assessment	Examination period				

Total CP	**180**

[1] Status (m = mandatory, me = mandatory elective)

[2] For a full listing of all CHOICE / CORE / CAREER / Constructor Track units / modules please consult the **CampusNet online catalogue** and /or the study program handbooks.

[3] German native speakers will have alternatives to the language courses (in the field of Humanities).

[4] Humanities I and II are optional to all students, except for German native speakers.

Figure 3: Study and Examination Plan

7 Integrated Social and Cognitive Psychology Modules

7.1 Essentials of Cognitive Psychology

<table>
<tr><td colspan="3">Module Name
Essentials of Cognitive Psychology</td><td>Module Code
CH-340</td><td>Level (type)
Year 1 (CHOICE)</td><td>CP
7.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CH-340-A | Essentials of Cognitive Psychology | Lecture | 7.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Song Yan</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory for ISCP, Mandatory for a minor in Cognitive Psychology.</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ None
Co-requisites: ☒ None
Knowledge, Abilities, or Skills: • none</td><td>Frequency

Annually (Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Lecture (52.5 hours)
• Private study (135 hours)

Workload

187.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="6">Content and Educational Aims

The module provides a comprehensive overview of the major fields of cognitive psychology and beyond. It focuses on how humans attend and perceive their environment; learn and remember information; solve problems and make decisions; differ in intelligence and personality; communicate via language; experience emotions; and what drives them (motivation) etc. The module covers the historical foundations of psychology, current influential theories and models as well as empirical research methods. This module also includes methods for critical thinking (evaluating current approaches and research results); the scientific cycle, including the basics of theory of science. The emphasis of this module is on human behavior, and it provides the basis for all other modules in psychology and prepares students for subsequent CORE and Specialization modules.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students will be able to

1. explain basic concepts in psychology (sensation, perception, learning, memory, problem solving, decision making, intelligence, personality, language, emotion, motivation);
2. explain the difference between scientific psychology and everyday psychology;
3. identify the limitations of theoretical approaches.</td></tr>
<tr><td colspan="6">Indicative Literature

Not Specified</td></tr>
<tr><td colspan="6">Usability and Relationship to other Modules</td></tr>
</table>

Examination Type: Module Examination

Assessment Type: Written examination

Duration: 180 Minutes
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.2 Essentials of Social Psychology

<table>
<tr><td colspan="3">Module Name
Essentials of Social Psychology</td><td>Module Code
CH-341</td><td>Level (type)
Year 1 (CHOICE)</td><td>CP
7.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CH-341-A | Essentials of Social Psychology | Lecture | 7.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Ulrich Kühnen</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory for ISCP and minor in Cognitive Psychology. Mandatory elective for GEM</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites | Co-requisites | Knowledge, Abilities, or Skills
☒ None | ☒ None | none</td><td>Frequency

annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Lecture (52.5 hours)
• Private study (135 hours)

Workload

187.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="6">Content and Educational Aims

In this module, you will begin to explore the influence that the actual or perceived presence of others can have on people's behaviors, thoughts, judgments and emotions – which are very much influenced by contextual factors such as the living environment, the social structure, or the political sphere, to name a few. However, context also refers to factors that influence how an object or a person is perceived, such as the perceiver's mood, expectations, needs and prior knowledge of a perceiver. Other social psychology issues of interest include how people interact, how inter-group conflict can be understood, and when people help each other or aggress against each other.

This module reviews important aspects of social psychological research, which then will be discussed in more detail in the respective CORE and Specialization seminars. Therefore, you will be familiarized with fundamental theories and concepts such as theories of attribution, dissonance, and self-perception theory, person perception and social encoding, stereotypes, inter-group conflict, motivation, and social identity.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students will be able to

1. explain seminal individual-level and group-level theories of social psychology;
2. explain major research approaches to psychological phenomena;
3. analyze selected current social debates (e.g., about migration) in social psychological terms
4. name and describe relationships with related sciences (e.g., biology, sociology);
5. describe current 'hot topics' in social psychological research.</td></tr>
</table>

Indicative Literature

Gilovich, T., Keltner, D., Chen, S. & Nisbett, R. (2018). Social Psychology. 5th International Student Edition. New York: W.W. Norton & Company ltd.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written examination Duration: 180 Minutes

Scope: All intended learning outcomes of the module. Weight: 100%

Completion: To pass this module, the examination has to be passed with at least 45%.

7.3 Learning and Memory

<table>
<tr><td colspan="2">Module Name
Learning and Memory</td><td>Module Code
CO-680</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CO-680-A | Learning and Memory | Seminar | 2.5
CO-680-B | Learning and Memory Lab | Lab | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Song Yan</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP and minor in Cognitive Psychology</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites | Co-requisites | Knowledge, Abilities, or Skills
☒ Essentials of Cognitive Psychology | ☒ none | • Basic statistics
• Scientific writing</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td>Forms of Learning and Teaching

• Seminar/lab (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="5">Content and Educational Aims

The study of memory seeks to understand how information is stored and retrieved, how new information is integrated with existing information, why we forget, and whether or not we can improve memory. This module provides an introduction to the current models of memory and the mechanisms of learning and memory, including its neural basis and scientific approaches for studying about learning and memory. By conducting basic experiments, the concept of model testing is trained, i.e., stating assumptions and deriving predictions, empirical testing, and possible modifications to the model. Throughout the module APA style is strictly followed.

Upon successful completion of this module, you should have knowledge of models and methods of research in the study of learning and memory. The aim of the module is to provide you with a solid understanding of the cognitive processes that give rise to the phenomena of learning and memory, research methods with which to study learning and memory phenomena, and the practical experience to conduct experimental work on these phenomena.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module, students will be able to

1. describe the basic processes of learning and memory;
2. distinguish types of memory stores and their functions;
3. explain the relationships and differences between learning and memory;
4. critically evaluate research findings;
5. conduct lab experiments related to learning/memory and evaluate the results.</td></tr>
</table>

Indicative Literature

Baddeley, A., Eysenck, M., & Anderson, M. (2020). Memory. 3rd Edition. Routledge.

Gluck, M., Mercado, E., & Myers, C. (2020). Learning and Memory. From Brain to Behavior. 4th ed. New York: Worth Publishers.

Usability and Relationship to other Modules

Examination Type: Module Component Examinations

Module Component 1: Seminar

Assessment Type: Written examination — Duration: 60 minutes; Weight: 50%

Scope: All intended learning outcomes of the lecture (1-4).

Module Component 2: Lab

Assessment Type: Project report — Length: 20 minutes; Weight: 50%

Scope: All intended learning outcomes of the lab (5).

Completion: To pass this module, both module component examinations have to be passed with at least 45%.

7.4 Social Cognition

<table>
<tr><td colspan="2">Module Name
Social Cognition</td><td>Module Code
CO-681</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CO-681-A | Social Cognition | Seminar | 2.5
CO-681-B | Social Cognition Lab | Lab | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Christian Stamov Roßnagel</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ Essentials of Cognitive Psychology

Co-requisites
☒ None

Knowledge, Abilities, or Skills
• None.</td><td>Frequency

annually (Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminar (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation

Social Cognition self-assessment on Campusnet.</td></tr>
<tr><td colspan="5">Content and Educational Aims

Individual experience is embedded in various social contexts ranging in layers of complexity from one's immediate social situation (e.g., others being present) to institutions (such as the workplace or the educational system) to cultural meaning systems. The components of this module investigate the dynamic and mutual relationship between individual actors and their social contexts across these layers of complexity. How is individual experience influenced by the actual or presumed presence of others? Do people act differently as members of social groups than they do as individuals? What are the implications of our insights into the social embeddedness of human behavior for interventions aimed at modifying behaviors?

This module will promote your insight into recent developments in social psychology as well as help you acquire a broad and thorough understanding of today's most important topics in social psychological research. You will refine your methodological skills by analyzing extant research as well as designing new studies. Moreover, you will be given sufficient opportunity to familiarize yourself with the approaches to and issues of application-oriented research.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module, students will be able to

1. explain seminal models and fundamental processes of social cognition and group processes;
2. describe and critically evaluate the social-cognitive approach;
3. analyze and contrast selected alternative explanations;
4. explain major sources of individual-level and group-level social influence;
5. name needs for and outline strategies to modify or extend current theories and models;
6. apply social cognitive theorizing to explain or predict real-world phenomena.</td></tr>
</table>

Indicative Literature

Not specified

Usability and Relationship to other Modules

Examination Type: Module Component Examinations

Module Component 1: Seminar

Assessment Type: Term paper — Length: 2000 words
Weight: 50%.

Scope: Intended learning outcomes (1-5)

Module Component 2: Lab

Assessment Type: Laboratory report — Length 1500 Words
Weight: 50%

Scope: Intended learning outcomes (1-3, 6)

Completion: To pass this module, both module component examinations have to be passed with at least 45%.

7.5 Organizational Psychology & Communication

<table>
<tr><td colspan="3">Module Name
Organizational Psychology & Communication</td><td>Module Code
CO-682</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components</td></tr>
<tr><td>Number</td><td colspan="3">Name</td><td>Type</td><td>CP</td></tr>
<tr><td>CO-682-A</td><td colspan="3">Organizational Psychology</td><td>Seminar</td><td>2.5</td></tr>
<tr><td>CO-682-B</td><td colspan="3">Communication and Interaction</td><td>Seminar</td><td>2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Christian Stamov Roßnagel</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites

☒ Essentials of Cognitive Psychology</td><td>Co-requisites

☒ none</td><td>Knowledge, Abilities, or Skills

• Basics of correlational statistics
• Concepts of generalizability, external, internal, and ecological validity</td><td>Frequency

Annually (Fall)

Duration

2 semesters</td><td>Forms of Learning and Teaching

• Seminars (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation</td></tr>
<tr><td colspan="6">Content and Educational Aims

Building on the conceptual and methodological foundations established in the Social Cognition module, the general question guiding this module is how insights into the socio-cultural embeddedness of human behavior can help us ‘understand’ (e.g., assess, diagnose) and change behavior in complex real-world settings. One such setting are organizations, i.e. structured social units in which people collaborate to reach collective goals. We explore how person level and organizationlevel factors (e.g., organizational climate) interact to shape workers’ organizational behavior in terms of motivation, communication, and collaboration. We will pay special attention to the opportunities and challenges of the increasing diversity of people in contemporary organizations.
Communication, and the social interaction it involves, is a fascinating example of both such opportunities and challenges. While communicative processes unfold differently as a function of the diversity contexts they are embedded in, at the same time those processes are the means to systematically influence social interactions in diverse groups, teams, and organizations in a solution-oriented manner. Different as communicative processes may be at the surface level (including, for instance, verbal interactions, nonverbal cues, and human-computer interaction), there are fundamental cognitive and social processes that underlie human communication in all its forms. We will look at how communication shapes personal relationships and differentiates potentially hazardous misunderstandings from successful interactions in a range of settings, such as sales communication, supervisor-employee interactions, therapeutic change talk, and conflict resolution and negotiation.
In addition to providing you with insights into current ‘hot topics’ in social and cultural psychology, this module focuses on the approaches and contemporary issues of application-oriented research in both fields. Using case studies from actual consulting projects as examples, you will refine your skills for analyzing real-life situations in a theory-based fashion and of designing strategies for assessments and interventions in selected communication settings.</td></tr>
</table>

Intended Learning Outcomes

By the end of this module, students will be able to

1. explain how quantitative theories may and may not be applied to individuals, groups, or organizations;
2. explain how evidence-based problem solutions are generated;
3. apply qualitative and quantitative methods to design case-specific data collection strategies;
4. demonstrate the ability to communicate high-level research findings to non-experts without information loss;
5. apply social influence theories to develop strategies for stakeholder management.

Indicative Literature

King, D. & Lawley, S. (2019). Organizational Behaviour (3e). Oxford: Oxford University Press. ISBN: 9780198807780

Röhner J. & Schütz, A. (2021). Psychology of Communication. Wiesbaden: Springer. ISBN 978-3-030-60169-0

Usability and Relationship to other Modules

Examination Type: Module Examination

Module Component 1: Seminar
Assessment Type: Written examination — Duration: 60 minutes, Weight: 50%

Module Component 2: Seminar
Assessment Type: Written examination — Duration: 60minutes, Weight: 50%

Scope: All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%.

7.6 Neurobiology of Behavior

<table>
<tr><td colspan="2">Module Name
Neurobiology of Behavior</td><td>Module Code
CO-683</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CO-683-A | Neurobiology of Behavior I | Lecture | 2.5
CO-683-B | Neurobiology of Behavior II | Lecture | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Ben Godde</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory for a minor in Cognitive Psychology
Mandatory elective for BCCB and ISCP</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites | Co-requisites | Knowledge, Abilities, or Skills
☒ Essentials of Cognitive Psychology | ☒ None | None</td><td>Frequency

Annually (Fall)

Duration

2 semesters</td><td colspan="2">Forms of Learning and Teaching

• Lectures (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="5">Content and Educational Aims

This module introduces state-of-the-art knowledge of structure-function relationships in the mammalian nervous system, particularly at the large-scale systems level. Starting from the organization of neural systems and the neuroanatomy of the brain, this module focuses on the neurobiological basis of cognitive processing in the areas of perception, motor control, attention, emotion, memory, learning, and language, etc. How do neurons communicate? What do drugs do to the brain and how do they alter behavior? How is the brain involved in making decisions? How does the brain change? These and other questions as well as critical perspectives are addressed in this module.

With a clear focus on the human brain, the module provides a basic review of the brain as a biological organ, including its basic structure and operations, and teaches students how the brain gives rise to a wide variety of complex behaviors. You will learn how to integrate knowledge obtained from several levels of analysis – neurons, circuits, systems – into a coherent understanding of the brain's structure and function. Thus, this module, lays the groundwork for other modules in psychology that relate behavior to underlying neural mechanisms. You will learn to evaluate the challenges and limits of modern, neuro-oriented psychology.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module, you will be able to

1. explain the brain's basic structure and processes;
2. describe how brain structures and functions relate to psychological processes, phenomena, and behaviors;
3. critically evaluate the neuroscience approach to psychology.</td></tr>
<tr><td colspan="5">Indicative Literature

Kolb, B. & Wishaw I.Q (2015).Fundamentals of Human Neuropsychology, 7th ed. New York: Worth Publishers.
Breedlove, S.M. & Watson, N.V. (2017). Behavioral Neuroscience, 8th ed. Sunderland: Sinauer.</td></tr>
</table>

Usability and Relationship to other Modules
Examination Type: Module Examination Assessment Type: Written examination — Duration: 120 minutes Scope: All intended learning outcomes of the module. — Weight: 100% Completion: To pass this module, the examination has to be passed with at least 45%.

7.8 Neuroscience Methods

<table>
<tr><td colspan="3">Module Name

Neuroscience Methods</td><td>Module Code

CO-684</td><td>Level (type)

Year 2 (CORE)</td><td>CP

5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CO-684-A | Neuroscience Methods | Seminar | 2.5
CO-684-B | Neuroscience Methods Lab | Lab | 2.5</td></tr>
<tr><td colspan="2">Module Coordinator

Prof. Dr. Ben Godde</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for BCCB and ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ Essentials of Cognitive Psychology
Co-requisites: ☒ Neurobiology of Behavior 1
Knowledge, Abilities, or Skills</td><td>Frequency

Annually

(Fall)

Duration

2 semesters</td><td colspan="2">Forms of Learning and Teaching

• Seminar/lab (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None</td></tr>
<tr><td colspan="6">Content and Educational Aims

In neurobiology and cognitive psychology, respectively, a vast array of methods exists for investigating neuropsychological processes from single cells up to complex human behavior. Apart from basic research, these methods are very important in clinical investigations. Both in terms of methods that enable researchers to analyze processes (e.g. structural and functional neuroimaging, magnetoencephalography) and of techniques for manipulating processes (e.g. brain stimulation, optogenetic methods), fundamental new techniques have been developed recently.

Based on this, a thorough overview of available methods and their specific purposes is essential. With a strong focus on human brain imaging and electrophysiology, this module provides you with both practical skills and the conceptual knowledge to responsibly choose modern human brain imaging techniques for specific research or diagnostics purposes and to critically discuss their application potential as revealed by seminal or recent publications in the field.</td></tr>
</table>

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. choose and apply appropriate methods to answer specific research questions;
2. interpret empirical results in the context of the chosen methods;
3. draw implications for further research from specific findings;
4. critically assess and compare the advantages and disadvantages of selected techniques.

Indicative Literature

Kolb, B. & Wishaw I.Q (2015).Fundamentals of Human Neuropsychology, 7th ed. Chapter 7: Imaging the brain's activity. New York: Worth Publishers.

Usability and Relationship to other Modules

Examination Type: Module Component Examinations

Module Component 1: Seminar

Assessment Type: Term Paper — Length 1500 Words

Weight: 50%

Scope: Intended learning outcomes of seminar (2-4).

Module achievement: giving a presentation is pre-requisite prior to submission of the term paper

Module Component 2: Lab

Assessment Type: Laboratory report — Length 1500 Words

Weight: 50%

Scope: Intended learning outcomes of the lab (1).

Completion: To pass this module, both module component examinations have to be passed with at least 45%.

7.9 Attention, Sensation, & Perception

<table>
<tr><td colspan="3">Module Name
Attention, Sensation, & Perception</td><td>Module Code
CO-685</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CO-685-A | Attention, Sensation & Perception | Seminar | 2.5
CO-685-B | Attention, Sensation & Perception Lab | Lab | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Song Yan</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory for minor in Cognitive Psychology
Mandatory elective for ISCP</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ Essentials of Cognitive Psychology</td><td>Co-requisites
☒ none</td><td>Knowledge, Abilities, or Skills
• Basic statistics
• Scientific writing</td><td>Frequency

Annually (Fall)

Duration

1 semester</td><td>Forms of Learning and Teaching

• Seminar/lab (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

Wolfe, J.M. et al. (2015). Sensation & Perception, 4ed. . Oxford: Sinauer.</td></tr>
<tr><td colspan="6">Content and Educational Aims

Attention and perception are essential processes for humans and animals to learn about the world around them. Sensation refers to the process of detecting a stimulus or a stimulus property in the environment. It is the necessary collection of information about the surroundings in which perceptions are made. Perception refers to the way in which we interpret the information gathered by our senses. Attention research seeks to understand how attention allows and affects detection, perception, and the encoding of information. Perception includes vision, audition, touch, smell, and taste. Attention focuses on divided, selective involuntary and voluntary attention and attention across modalities.

Upon successful completion of this module, you understand the models and methods of research in perception and attention. The aim of this module is to provide you with a basic understanding of the physiological processes that give rise to perceptual phenomena, behavioral research methods that include programming to investigate perceptual and attentional phenomena, and practical experience to conduct experimental work on those phenomena.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students will be able to

1. describe the basic processes of attention and perception;
2. explain the link between different sensory modalities (cross modal interaction);
3. demonstrate an understanding of the connection between neurophysiological processes and perceptual phenomena;
4. critically evaluate research findings;
5. conduct lab experiments related to attention/perception and evaluate the results.</td></tr>
</table>

Indicative Literature

Not specified

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Laboratory Report

Length: 1500 Words
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.10 Judgment & Decision Making

<table>
<tr><td colspan="3">Module Name
Judgment & Decision Making</td><td>Module Code
CO-686</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CO-686-A | Judgment & Decision Making | Seminar | 5.0</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Song Yan</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ Essentials of Cognitive Psychology
Co-requisites: ☒ None
Knowledge, Abilities, or Skills:
• Basics in probability theory
• Scientific writing</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminar (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="6">Content and Educational Aims

Judgment and decision-making are broad and complex areas of great theoretical interest and practical impact in almost all of contemporary disciplines. The focus here is on psychological perspectives. Applications of decision-making research in marketing, medicine, law, and other areas are discussed. This module includes topics such as heuristics and biases, decision making under risk and uncertainty, preference and choice, confidence, and more.

Upon successful completion of this module, you understand the models and methods of research in judgment and decision making. The aim of this module is to provide you with basic concepts from probability theory and expected utility theory to serve as a benchmark for evaluating judgments and decision-making. Psychological models of decision-making that describe human judgment and decision making are discussed. Historical background and classic paradigms are also provided to enable you to understand and evaluate current research.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students will be able to
1. describe the major models and theories of behavioral decision making;
2. explain this field's major methods, results, and controversies;
3. select generalizable findings and apply them to solve actual decision-making problems;
4. discuss applications of decision-making research in marketing, medicine, and law.</td></tr>
</table>

Indicative Literature

Not specified

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written examination

Duration: 120 Minutes
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.11 Health Psychology

<table>
<tr><td colspan="3">Module Name
Health Psychology</td><td>Module Code
CO-687</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CO-687-A | Health Psychology | Seminar | 2.5
CO-687-B | Health Psychology Lab | Lab | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Sonia Lippke</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites | Co-requisites | Knowledge, Abilities, or Skills
☒ Essentials of Cognitive Psychology | ☒ none | • Knowledge of history and methods in Psychology
• Skills to measure sensation, perception, attention, intelligence, emotion, motivation and personality
• Ability to support learning, critical thinking, problem solving, decision making</td><td>Frequency

Annually (Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminar/lab (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation
Marks, D. F., Murray, M. & Estacio, E. V. (2018). Health psychology. London: Sage.
Naidoo, J., & Wills, J. (2016). Foundations for Health Promotion. Elsevier Health Sciences.</td></tr>
<tr><td colspan="6">Content and Educational Aims

Within the layered approach of the ISCP program, this module focuses on the interaction between biology, health and behavior. Theories and models of health, behavior change, and stress development and management are introduced, as well as health promotion including both a biological and social-cognitive approach. Theoretical knowledge will be translated into applications by use of through practical experiences.

The interaction between biology and behavior will be investigated using the example of health and health behaviors. An understanding of factors important for the prevention of illness and maintenance of physical and mental health will be obtained. You will understand how motivation and behavioral change can be promoted and learn how to conduct applied and laboratory research as well as practical applications.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students will be able to

1. identify factors that impact health, well-being, and coping with stress;</td></tr>
</table>

2. critically evaluate the theories and models covered in terms of their usefulness to improve motivation and behavior;
3. design research programs in the field of health psychology and set up quality management systems;
4. apply scientific approaches and evidence-based theories.

Indicative Literature

Marks, D. F., Murray, M. & Estacio, E. V. (2018). Health psychology. London: Sage.

Davey, G. C. (Ed.) (2011). Applied psychology. Hoboken, N.J.: Wiley-Blackwell

Naidoo, J., & Wills, J. (2016). Foundations for Health Promotion. Elsevier Health Sciences.

Schaie, & S. L. Willis (Eds.), Handbook of the Psychology of Aging (8th ed.). Cambridge, MA: Academic Press.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written examination

Duration: 120 minutes
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.12 Cultural Psychology

<table>
<tr><td colspan="3">Module Name
Cultural Psychology</td><td>Module Code
CO-688</td><td>Level (type)
Year 2 (CORE)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CO-688-A | Culture and Cognition | Seminar | 2.5
CO-688-B | Cultural Psychology Lab | Lab | 2.5</td></tr>
<tr><td colspan="2">Module Coordinator

Prof. Dr. Ulrich Kühnen</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites | Co-requisites | Knowledge, Abilities, or Skills
☒ Essentials of Social Psychology | ☒ none</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminar and lab (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="6">Content and Educational Aims

Cognitive scientists and cultural theorists traditionally have thought about cultures' influences on cognition quite differently. From a cognitive science perspective, the study of cognition is typically construed as the search for those aspects of mental experience that are universally true for all. In fact, for much of the 20th century, most psychologists assumed that all normal human beings were equipped with the same set of attentional, perceptual, memorial, learning, and inferential procedures. From a cultural studies perspective, there is no avoiding the cultural framework within which individuals think and act. The idea of a universal mental experience is often rejected outright by many cultural theorists; every human thought and perception is uniquely situated within a very specific framework informed by history, tradition, language, and social context, etc. The goal of this module is to explore the dynamics of both perspectives by asking which aspects of human thinking and judgment are universal or culturally shaped. Spanning both individual-level and group-level analyses of the socio-cultural embeddedness of human experience and behavior, this module will help you acquire a broad and thorough understanding of today’s most important current topics in cultural psychology research.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

Upon completion of this module, students will be able to

1. critically reflect on empirical and theoretical scientific articles from cultural psychology;
2. integrate current research evidence in cultural psychology into its scientific context;
3. describe the influence of one’s own cultural experiences;
4. interpret based on the background of evidence-based insights, the interactions of people from different cultural backgrounds;
5. critically comment on societal debates related to migration.</td></tr>
<tr><td colspan="6">Indicative Literature

Not specified</td></tr>
</table>

Usability and Relationship to other Modules

Examination Type: Module Component Examinations

Module Component 1: Lecture

Assessment Type: Written examination — Duration: 60 minutes
Weight: 50%

Scope: All intended learning outcomes of the lecture (3-5)

Module Component 2: Lab

Assessment Type: Laboratory report — Length: 1500 Words
Weight: 50%

Scope: All intended learning outcomes of the lab (1-2).

Completion: To pass this module, both module component examinations have to be passed with at least 45%.

7.13 Human Neuroscience Advanced Lab

<table>
<tr><td colspan="3">Module Name
Human Neuroscience Advanced Lab</td><td>Module Code
CA-S-ISCP-801</td><td>Level (type)
Year 3
(CAREER - Specialization)</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CA-ISCP-801 | Human Neuroscience Advanced Lab | Lab / Seminar | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Ben Godde</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites
☒ Ess. of Cog. Psych.
☒ Neurobiol. of Behavior
☒ Neuroscience Methods

Co-requisites
☒ None

Knowledge, Abilities, or Skills
• None</td><td>Frequency

Annually (Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminar/Lab (17.5 hours)
• Private study (42.5 hours)

Workload

60 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None.</td></tr>
<tr><td colspan="6">Content and Educational Aims

This modul provides in-depth theoretical and practical insights into modern methods in human brain research, such as electroencephalography, brain imaging, and brain stimulation techniques. This module expands on the CORE module on Neuroscience Methods and prepares you to independently design and conduct experimental studies using these methods, as well as to process, analyze, and interpret acquired data. This module is mandatory if you aim to write a bachelor thesis using these methods.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

Upon completion of this module, students will be able to

1. select the appropriate brain imaging method for a specific research question;
2. design, prepare, and conduct a study using methods such as electroencephalography or transcranial brain stimulation;
3. process and analyze experimental data obtained with modern brain imaging techniques;
4. interpret and evaluate findings obtained using such methods.</td></tr>
<tr><td colspan="6">Indicative Literature

Kolb, B. & Wishaw I.Q (2015).Fundamentals of Human Neuropsychology, 7th ed. Chapter 7: Imaging the brain’s activity. New York: Worth Publishers.</td></tr>
<tr><td colspan="6">Usability and Relationship to other Modules</td></tr>
</table>

Examination Type: Module Examination

Assessment Type: Laboratory report — Length: 1500 Words
Scope: All intended learning outcomes of the module. — Weight: 100%

Completion: To pass this module, the examination has to be passed with at least 45%.

7.14 Abnormal and Clinical Psychology

Module Name	**Module Code**	**Level (type)**	**CP**
Abnormal and Clinical Psychology	CA-ISCP-807	Year 3 (CAREER Specialization)	2.5

Module Components

Number	Name	Type	CP
CA-ISCP-807	Abnormal and Clinical Psychology	Seminar	2.5

Module Coordinator	**Program Affiliation**	**Mandatory Status**
Thomas Lang	• Integrated Social and Cognitive Psychology (ISCP)	Mandatory elective for ISCP

Entry Requirements			**Frequency**	**Forms of Learning and Teaching**
Pre-requisites	Co-requisites	Knowledge, Abilities, or Skills	Annually (Spring)	• Seminars (17.5 hours) • Private study (45 hours)
☒ None	☒ none		**Duration**	**Workload**
			1 semester	62.5 hours

Recommendations for Preparation

Content and Educational Aims

This course will provide an overview of the scientific study of mental illness (psychopathology) and clinical psychology. First, the course will cover basic concepts and definitions of psychopathology (what is “normal” vs. “abnormal?), the assessment and diagnosis (categorial vs. dimensional classification; key elements of a diagnosis in DSM 5; behavioral and cognitive assessments) for mental illness. Second, the course addresses the leading categories of mental disorders among adults, including the description and classification of these disorders (diagnosis chapters of DSM 5), the leading theories and evidence explaining these disorders and the maintenance and treatment of this disorders (anxiety disorders, mood disorders, eating disorders and psychosis). Topics covered include also symptoms, etiology, maintenance, treatment of anxiety disorders, mood disorders, eating disorders and psychotic disorders.

Intended Learning Outcomes

Upon completion of this module, students will be able to:

1. use the categorical systems of psychopathology,
2. use diagnostic instruments for clinical assessment,
3. Explain the pathopsychology, maintenance, and treatment of mental disorders
4. explain CBT methods and effects for different disorders

Indicative Literature

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.)

Barlow, D. H., Durand, V. M., & Hoffmann, S. G. (2022). Psychopathology: An Integrative Approach to Mental Disorders. Cengage Learning EMEA.

Usability and Relationship to other Modules

Examination Type: Module Component Examination

Assessment type: Written Examination — Duration: 60 min. Weight: 100%

Scope: Intended Learning Outcomes (1-4)

Completion: To pass this module, the examination has to be passed with at least 45%.

7.15 Managing Demographic Change in Organizations

<table>
<tr><td colspan="3">Module Name
Managing Demographic Change in Organizations</td><td>Module Code
CA-S-ISCP-803</td><td>Level (type)
Year 3
(CAREER - Specialization)</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CA-ISCP-803 | Managing Demographic Change in Organizations | Seminar | 2.5</td></tr>
<tr><td>Module Coordinator

C. Stamov Roßnagel</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites

☒ Data Collection and Empirical Research Methodologies

☒ Qualitative Research Methods

and

☒ Applied Statistics with SPSS

Or

☒ Applied Statistics with R</td><td>Co-requisites

☒ none</td><td>Knowledge, Abilities, or Skills

• Basics of correlational statistics
• Concepts of generalizability, external, internal, ecological validity</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminars (17.5 hours)
• Private study (45 hours)

Workload

62.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation
None.</td></tr>
</table>

Content and Educational Aims

In many industrialized countries, organizations face an aging labor force. Fewer young workers than ever be-fore enter the labor force, while older workers retire at a higher age than previous cohorts. The general question that this demographic change raises is how organizations might have to adapt their personnel management strategies to keep productivity high. How does team-work, learning, or leadership change in an increasingly age-diverse work-place? How do the generations (e.g., Gen Y, Generation X, Boomers) actually differ from a personnel development point of view?
Applying general models of lifespan development, organizational climate, leadership, training and development, and work teams to real-world cases, you will slip into organizational consultants' shoes and develop strategies for organizational demographic change management that you will then present to the CHRO of your (fictitious) company. We will pay particular attention to the theory-practice gap and its implications for practical work in consultant roles and will learn how to appropriately use research findings in strategy development.
This module attaches particular importance to an in-depth treatment of the approaches and contemporary issues of application-oriented research. Using case studies from actual consulting projects as real-life examples, you will refine your ability to analyze real-life situations based on a theory-based fashion and to design strategies for assessments and interventions in selected workplace settings.

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. explain how age-related changes in cognition and motivation influence work processes and outcomes;
2. develop a theory-based strategy for analyzing individual companies training and development needs;
3. apply organizational psychological theories to define specific interventions that address the negative effects of aging on individual and team performance;
4. translate research findings into implications that inform personnel-related decision-making.

Indicative Literature

Boehm, S.A., & Kunze, F. (2015). Age Diversity and Age Climate in the Workplace. In P.M. Bal, D.T.A.M. Kooij, & D.M. Rousseau (Eds), Aging Workers and the Employee-Employer Relationship (pp. 33-56). Heidelberg: Springer.

Hobfoll, S.E., Halbesleben, J., Neveu, J.-P., & Westman, M. (2018). Conservation of Resources in the Organizational Context: The Reality of Resources and Their Consequences. Annual Review of Organizational Psychology and Organizational Behavior, 5, 103-128.

Truxillo,D.M., Cadiz,D.M. , & Hammer, L.B. (2015). Supporting the Aging Workforce: A Review and Recommendations for Workplace Intervention Research. Annual Review of Organizational Psychology and Organizational Behavior, 2, 351-381.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Presentation

Duration: 20 minutes
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.16 Psychology of digital Interventions

<table>
<tr><td colspan="3">Module Name
Psychology of digital Interventions</td><td>Module Code
CA-ISCP-806</td><td>Level (type)
Year 3 (Specialization)</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CA-ISCP-806 | Psychology of digital Interventions | Lab | 2.5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Sonia Lippke</td><td colspan="3">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td>Entry Requirements

Pre-requisites

☒ none</td><td>Co-requisites

☒ none</td><td>Knowledge, Abilities, or Skills
• Knowledge of psychological, computer science/ engineering basics or robotics or artificial intelligence
• Skills to measure or improve behavior or motivation
• Ability to support learning, critical thinking, problem solving and decision making</td><td>Frequency

Annually (Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

Lab (17.5 hours)
Privat study (45 hours)

Workload

62.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation
Marks, D. F., Murray, M. & Estacio, E. V. (2018). Health psychology. London: Sage.
Davey, G. C. (Ed.) (2011). Applied psychology. Hoboken, N.J.: Wiley-Blackwell.
Prestwich, A., Conner, M., & Kenworthy, J. (2017). Health behavior change: Theories, methods and interventions. New York: Routledge.</td></tr>
<tr><td colspan="6">Content and Educational Aims

Within the interdisciplinary approach of different bachelor programs, this module focuses on the psychological aspects of interaction between human, computer and digital interventions. Theories and models of behavior change, and approaches like intervention mapping are reviewed, as well as research techniques discussed focusing on the types and methods of web-based research including web surveys and questionnaire research, web experiments and mobile experience sampling. How to research sensitive or illegal topics and what the ethical aspects are relating to the internet research and intervention approaches will be covered. We will also spend significant amount of time on how to conceptualize and prevent recruitment problems, dropout and other nonresponse patterns. The aim is to obtain psychological skills for designing, implementing and evaluating technology. Theoretical knowledge will be translated into applications by use of practical exercises in a lab setting from a psychology perspective. You will understand the psychological basis and interrelations of digital interventions and learn how to conduct applied and laboratory research also by means of co-creative means. We will conclude for practical applications and interdisciplinary solutions keeping the psychological incremental value (social participation etc.) but also adverse effects into account (e.g., FOMO, dependency).</td></tr>
</table>

Intended Learning Outcomes

Upon completion of this module, students will be able to:

5. Acquire skills to diagnose where and how to intervene by means of psychological approaches;
6. Perform a needs-assessment drawing on psychological methods;
7. Use the Intervention Mapping approach to plan and implement a psychological meaningful intervention;
8. Exercise co-creative app design;
9. Consider ethical and moral aspects;
10. identify factors that impact interaction between human, computer and interventions;
11. critically evaluate the theories and models covered in terms of their usefulness to improve digital interventions;
12. design research programs in the field of psychology or on psychological meaningful subjects;
13. apply scientific approaches and understand team working on digital interventions.

Indicative Literature

Kwasnicka, D., Keller, J., Perski, O., Potthoff, S., Ten Hoor, G. A., Ainsworth, B., ... & Sanderman, R. (2022). White Paper: Open Digital Health–accelerating transparent and scalable health promotion and treatment. White Paper: Open Digital Health. Health Psychology Review. https://doi.org/10.1080/17437199.2022.2046482

Noorbergen, T. J., Adam, M. T., Roxburgh, M., & Teubner, T. (2021). Co-design in mHealth systems development: insights From a systematic literature review. AIS Transactions on Human-Computer Interaction, 13(2), 175-205. Co-design in mHealth Systems Development: Insights From a Systematic Literature Review (aisnet.org)

Langener, S., Ratz, T., & Lippke, S. (2018). User-centered Digital Health Application Development To Promote Healthy Ageing. MEDIENPRODUKTION – Online Zeitschrift für Wissenschaft und Praxis, 12, 23-32. http://www5.tu-ilmenau.de/zeitschrift-medienproduktion/index.php/user-centered-digital-health-application-development-to-promote-healthy-ageing/

Reips, U. D. (2021). Web-Based Research in Psychology. Zeitschrift für Psychologie. Web-Based Research in Psychology: A Review: Zeitschrift für Psychologie: Vol 229, No 4 (hogrefe.com)

More recent evidence regarding Digital Health Interventions for Psychological and Behavioral Changes During the COVID-19 Pandemic see, e.g., https://www.frontiersin.org/research-topics/19211

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Presentation

Duration/Length: (30 min/ 30 slides)
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%.

7.17 The Science of Happiness

<table>
<tr><td colspan="2">Module Name
The Science of Happiness</td><td>Module Code
CA-S-ISCP-805</td><td>Level (type)
Year 3
(CAREER - Specialization)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CA-ISCP-805 | The Science of Happiness | Seminar | 5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Song Yan</td><td colspan="2">Program Affiliation

• Integrated Social and Cognitive Psychology (ISCP)</td><td colspan="2">Mandatory Status

Mandatory elective for ISCP</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites: ☒ None
Co-requisites: ☒ none
Knowledge, Abilities, or Skills:
• Knowledge of general psychological concepts
• Basics of psychological research methods</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Seminars (35 hours)
• Private study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation
None.</td></tr>
<tr><td colspan="5">Content and Educational Aims

Following the principles of positive psychology, this module will focus on the theories and research centered on the nature of happiness and psychological well-being. Topics covered will include concept(s) and measurement of happiness, determinants and correlates of happiness, theories of psychological well-being, culture and happiness, benefits of happiness and the implications of happiness research.

The aim of this module is to give you a greater understanding of what happiness is. Alongside theory, you will also engage in a series of exercises designed to increase your own happiness and benefit from learning and applying the psychological science of well-being.

This module will be a combination of lectures/presentations, class discussions and self-exploration exercises.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By completion of this module, students will be able to

Discipline Specific Skills;

1. demonstrate an understanding of concepts and contemporary approaches to happiness;
2. become acquainted with scientific studies on subjective well-being;
3. identify the practical application of the science of happiness both for personal life and professional goals;

Transferable and Key Skills

4. reflect and think critically;
5. apply techniques to increase happiness and overall quality of life;
6. apply discussion and Communication skills;
7. apply independent learning strategies.</td></tr>
</table>

Indicative Literature
Usability and Relationship to other Modules
Examination Type: Module Examination Type: Project Assessment & Presentation Duration of the presentation: 20 minutes Weight: 100% Scope: All intended learning outcomes of the module. Completion: To pass this module, the examination has to be passed with at least 45%.

7.18 Intercultural Trainer Academy

<table>
<tr><td colspan="2">Module Name
Intercultural Trainer Academy</td><td>Module Code
CA-S-ISCP-910</td><td>Level (type)
Year 3</td><td>ECTS
5.0</td></tr>
<tr><td colspan="5">Module Components

Number | Type | ECTS
CA-ISCP-910 | Intercultural Trainer Academy (Intersession) | Seminar | 5.0</td></tr>
<tr><td>Module Coordinator
Prof. Dr. Ulrich Kühnen</td><td colspan="2">Program Affiliation
• Integrated Social and Cognitive Psychology</td><td colspan="2">Mandatory Status
Mandatory elective for ISCP</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ CO-688 - Culture and Cognition

Co-requisites
☐ None

Knowledge, Abilities, or Skills
•</td><td>Frequency
annually

Duration
1 semester</td><td colspan="2">Forms of Learning and Teaching
• Seminar (35 hours)
• Individual study (90 hours)

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

This seminar complements the more theoretical seminars and lectures of the first semesters by applying the taught concepts in designing interventions on intercultural competence. Students participating in the Intercultural Trainer Academy will first receive a 4 day training for trainers with an external professional consultant teaching similar workshops for international organizations. During that period each student will actively facilitate some exercises. The seminar will then continue with an analysis of the methods for intercultural training varying in scope from culture-specific to culture-general, teaching and learning styles in cultural contexts, and the evaluation of their effectiveness. The examined and techniques applied will include deductive (such as classic lecture-style presentations) as well as highly interactive experiential components (such as role-play simulations).</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module students:
• should be able to name the important educational principles of intercultural competence trainings
• should be able to mention all the important steps of developing one practical exercise to teach intercultural competence.
• should be able to design, conduct, debrief and to evaluate one such exercise under supervision.</td></tr>
<tr><td colspan="5">Usability and Relationship to other Modules

Following this module, students may choose to participate in an additional three-day workshop. This workshop will give students the opportunity to apply the learned knowledge. Specifically, participants will design and facilitate parts of intercultural training units and will get intensive feedback about their performance. A</td></tr>
</table>

cross-cultural researcher and a training expert will co-teach this workshop. After having participated for the complete 10 days (i.e. having taken the Intercultural Trainer Academy and this three-day workshop), class members can earn a certificate "Intercultural Trainer" awarded by the Constructor University and InterCultur.

Examination Type: Module Examination
Assessment Type: Term pater — Duration/Length: 3500 words
Weight: 100%

Scope: All intended learning outcomes of the module

Completion: To pass this module, the examination has to be passed with at least 45%.

7.19 Internship / Startup and Career Skills

<table>
<tr><td colspan="2">Module Name

Internship / Startup and Career Skills</td><td>Module Code

CA-INT-900</td><td>Level (type)

Year 3

(CAREER)</td><td>CP

15</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP</td></tr>
<tr><td>CA-INT-900-0</td><td colspan="2">Internship</td><td>Internship</td><td>15</td></tr>
<tr><td>Module Coordinator

Clémentine Senicourt &

Dr. Tanja Woebs (CSC Organization);

SPC / Faculty Startup Coordinator (Academic responsibility)</td><td colspan="2">Program Affiliation

• CAREER module for undergraduate study programs</td><td colspan="2">Mandatory Status

Mandatory for all undergraduate study programs except IEM</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites: ☒ at least 15 CP from CORE modules in the major
Co-requisites: ☒ None
Knowledge, Abilities, or Skills:
• Information provided on CSC pages (see below)
• Major specific knowledge and skills</td><td>Frequency

Annually

(Spring/Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Internship/Start-up
• Internship event
• Seminars, info-sessions, workshops and career events
• Self-study, readings, online tutorials

Workload

375 Hours consisting of:
• Internship (308 hours)
• Workshops (33 hours)
• Internship Event (2 hours)
• Self-study (32 hours)</td></tr>
<tr><td colspan="5">Recommendations for Preparation

• Please see the section “Knowledge Center” at JobTeaser Career Center for information on Career Skills seminar and workshop offers and for online tutorials on the job market preparation and the application process. For more information, please see https://constructor.university/student-life/career-services
• Participating in the internship events of earlier classes</td></tr>
</table>

Content and Educational Aims

The aims of the internship module are reflection, application, orientation, and development: for students to reflect on their interests, knowledge, skills, their role in society, the relevance of their major subject to society, to apply these skills and this knowledge in real life whilst getting practical experience, to find a professional orientation, and to develop their personality and in their career. This module supports the programs' aims of preparing students for gainful, qualified employment and the development of their personality.

The full-time internship must be related to the students' major area of study and extends lasts a minimum of two consecutive months, normally scheduled just before the 5th semester, with the internship event and submission of the internship report in the 5th semester. Upon approval by the SPC and CSC, the internship may take place at other times, such as before teaching starts in the 3rd semester or after teaching finishes in the 6th semester. The Study Program Coordinator or their faculty delegate approves the intended internship a priori by reviewing the tasks in either the Internship Contract or Internship Confirmation from the respective internship institution or company. Further regulations as set out in the Policies for Bachelor Studies apply.

Students will be gradually prepared for the internship in semesters 1 to 4 through a series of mandatory information sessions, seminars, and career events.
The purpose of the Career Services Information Sessions is to provide all students with basic facts about the job market in general, and especially in Germany and the EU, and services provided by the Career Services Center.
In the Career Skills Seminars, students will learn how to engage in the internship/job search, how to create a competitive application (CV, Cover Letter, etc.), and how to successfully conduct themselves at job interviews and/or assessment centers. In addition to these mandatory sections, students can customize their skill set regarding application challenges and their intended career path in elective seminars.
Finally, during the Career Events organized by the Career Services Center (e.g. the annual Constructor University Career Fair and single employer events on and off campus), students will have the opportunity to apply their acquired job market skills in an actual internship/job search situation and to gain their desired internship in a high-quality environment and with excellent employers.
As an alternative to the full-time internship, students can apply for the StartUp Option. Following the same schedule as the full-time internship, the StartUp Option allows students who are particularly interested in founding their own company to focus on the development of their business plan over a period of two consecutive months. Participation in the StartUp Option depends on a successful presentation of the student's initial StartUp idea. This presentation will be held at the beginning of the 4th semester. A jury of faculty members will judge the student's potential to realize their idea and approve the participation of the students. The StartUp Option is supervised by the Faculty StartUp Coordinator. At the end of StartUp Option, students submit their business plan. Further regulations as outlined in the Policies for Bachelor Studies apply.

The concluding Internship Event will be conducted within each study program (or a cluster of related study programs) and will formally conclude the module by providing students the opportunity to present on their internships and reflect on the lessons learned within their major area of study. The purpose of this event is not only to self-reflect on the whole internship process, but also to create a professional network within the academic community, especially by entering the Alumni Network after graduation. It is recommended that all three classes (years) of the same major are present at this event to enable networking between older and younger students and to create an educational environment for younger students to observe the "lessons learned" from the diverse internships of their elder fellow students.

Intended Learning Outcomes

By the end of this module, students should be able to

1. describe the scope and the functions of the employment market and personal career development;
2. apply professional, personal, and career-related skills for the modern labor market, including self-organization, initiative and responsibility, communication, intercultural sensitivity, team and leadership skills, etc.;
3. independently manage their own career orientation processes by identifying personal interests, selecting appropriate internship locations or start-up opportunities, conducting interviews, succeeding at pitches or assessment centers, negotiating related employment, managing their funding or support conditions (such as salary, contract, funding, supplies, work space, etc.);
4. apply specialist skills and knowledge acquired during their studies to solve problems in a professional environment and reflect on their relevance in employment and society;
5. justify professional decisions based on theoretical knowledge and academic methods;
6. reflect on their professional conduct in the context of the expectations of and consequences for employers and their society;

7. reflect on and set their own targets for the further development of their knowledge, skills, interests, and values;
8. establish and expand their contacts with potential employers or business partners, and possibly other students and alumni, to build their own professional network to create employment opportunities in the future;
9. discuss observations and reflections in a professional network.

Indicative Literature

Not specified

Usability and Relationship to other Modules

- This module applies skills and knowledge acquired in previous modules to a professional environment and provides an opportunity to reflect on their relevance in employment and society. It may lead to thesis topics.

Examination Type: Module Examination

Assessment Type: Project Report — Length: approx. 3.500 words
Scope: All intended learning outcomes — Weight: 100%
Completion: To pass this module, the examination has to be passed with at least 45%.

7.20 Bachelor Thesis and Seminar

<table>
<tr><td colspan="3">Module Name

Bachelor Thesis and Seminar</td><td>Module Code

CA-ISCP-800</td><td>Level (type)

Year 3
(CAREER)</td><td>CP

15</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CA-ISCP-800-T | Thesis | Thesis | 12
CA-ISCP-800-S | Thesis Seminar | Seminar | 3</td></tr>
<tr><td colspan="2">Module Coordinator

Study Program Chair</td><td colspan="2">Program Affiliation

• All undergraduate programs</td><td colspan="2">Mandatory Status

Mandatory for all undergraduate programs</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites

☒ Students must have taken and successfully passed a total of at least 30 CP from advanced modules, and of those, at least 20 CP from advanced modules in the major.

Co-requisites

☒ None

Knowledge, Abilities, or Skills

• comprehensive knowledge of the subject and deeper insight into the chosen topic;
• ability to plan and undertake work independently;
• skills to identify and critically review literature.</td><td>Frequency

Annually
(Spring)

Duration

14-week lecture period</td><td colspan="2">Forms of Learning and Teaching

• Self-study/lab work (350 hours)
• Seminars (25 hours)

Workload

375 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

• Identify an area or a topic of interest and discuss this with your prospective supervisor in a timely manner.
• Create a research proposal including a research plan to ensure timely submission.
• Ensure you possess all required technical research skills or are able to acquire them on time.
• Review the University's Code of Academic Integrity and Guidelines to Ensure Good Academic Practice.</td></tr>
</table>

Content and Educational Aims

This module is a mandatory graduation requirement for all undergraduate students to demonstrate their ability to address a problem from their respective major subject independently using academic/scientific methods within a set time frame. Although supervised, this module requires students to be able to work independently and systematically and set their own goals in exchange for the opportunity to explore a topic that excites and interests them personally and that a faculty member is interested in supervising. Within this module, students apply their acquired knowledge about their major discipline and their learned skills and methods for conducting research, ranging from the identification of suitable (short-term) research projects, preparatory literature searches, the realization of discipline-specific research, and the documentation, discussion, interpretation, and communication of research results.

This module consists of two components, an independent thesis and an accompanying seminar. The thesis component must be supervised by a Constructor University faculty member and requires short-term research work, the results of which must be documented in a comprehensive written thesis including an introduction, a justification of the methods, results, a discussion of the results, and a conclusion. The seminar provides students with the opportunity to practice their ability to present, discuss, and justify their and other students' approaches, methods, and results at various stages of their research in order to improve their academic writing, receive and reflect on formative feedback, and therefore grow personally and professionally.

Intended Learning Outcomes

On completion of this module, students should be able to

1. independently plan and organize advanced learning processes;
2. design and implement appropriate research methods, taking full account of the range of alternative techniques and approaches;
3. collect, assess, and interpret relevant information;
4. draw scientifically-founded conclusions that consider social, scientific, and ethical factors;
5. apply their knowledge and understanding to a context of their choice;
6. develop, formulate, and advance solutions to problems and debates within their subject area, and defend these through argument;
7. discuss information, ideas, problems, and solutions with specialists and non-specialists.

Usability and Relationship to other Modules

- This module builds on all previous modules in the undergraduate program. Students apply the knowledge, skills, and competencies they have acquired and practiced during their studies, including research methods and their ability to acquire additional skills independently as and if required.

Examination Type: Module Component Examinations

Module Component 1: Thesis
Assessment type: Thesis
Scope: All intended learning outcomes, mainly 1-6.
Length: approx. 6.000 – 8.000 words (15 – 25 pages), excluding front and back matter.
Weight: 80%

Module Component 2: Seminar
Assessment type: Presentation
Duration: approx. 15 to 30 minutes
Weight: 20%

Scope: The presentation focuses mainly on ILOs 6 and 7, but by nature of these ILOs it also touches on the others.

Completion: To pass this module, both module component examinations have to be passed with at least 45%.

Two separate assessments are justified by the size of this module and the fact that the justification of solutions to problems and arguments (ILO 6) and discussion (ILO 7) should at least have verbal elements. The weights of the types of assessments are commensurate with the sizes of the respective module components.

8 ConstructorTrack Modules

8.1 Methods

8.1.1 Academic Writing and Academic Skills

<table>
<tr><td colspan="3">Module Name
Academic Writing and Academic Skills</td><td>Module Code
CTMS-MET-01</td><td>Level (type)
Year 1 (Methods)</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTMS-01 | Academic Writing and Academic Skills | Lecture/Tutorial | 5</td></tr>
<tr><td colspan="2">Module Coordinator

Dr. Mandi Larsen</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory for ISCP, IRPH</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ None
Co-requisites: ☒ None
Knowledge, Abilities, or Skills: • none</td><td>Frequency

Annually (Fall)</td><td colspan="2">Forms of Learning and Teaching

• Lecture (20 hours)
• Tutorials (15 hours)
• Literature search and review (35 hours)
• Preparation of draft paper (35 hours)
• Peer review (10 hours)
• Revision of final paper (10 hours)</td></tr>
<tr><td colspan="3"></td><td>Duration

1 semester</td><td colspan="2">Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

None</td></tr>
<tr><td colspan="6">Content and Educational Aims

In this module, students acquire basic skills necessary for academic work and academic writing. The module introduces students to the differences between academic and non-academic sources, how to make use of online databases of academic literature, and how to properly conduct a literature search. Techniques will be demonstrated for the critical reading and understanding of academic sources (e.g., monographs, edited volumes, journal articles) necessary for their studies. The module also focuses on the fundamentals of academic writing, including the development of a clear thesis statement, organized structure, and rational argumentation. Students are presented with simple approaches to summarizing, paraphrasing, and synthesizing ideas and results found in academic social science literature. Additionally, students will acquire proficiency in citation and referencing rules, as well as style guides.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

By the end of this module, students should be able to
1. • recognize the difference between academic and non-academic sources;
2. • conduct an academic literature review;
3. • successfully synthesize various academic sources to create a coherent argument;
4. • accurately apply citation and referencing rules;
5. • write a clearly structured and organized academic paper.</td></tr>
</table>

Indicative Literature

Spatt, B. (2016). Writing from sources. Boston, MA: Bedford/St. Martin's.
Bailey, S. (2006). Academic writing: A handbook for international students. New York, NY: Routledge.

Usability and Relationship to other Modules

- This module lays the foundation for the entire period of study at Constructor University, but is especially useful for modules with a specific focus on written work and for the Bachelor's Thesis.

Examination Type: Module Examinations

Assessment Type: Term paper — Length: 3.000 words
Weight: 100%

Scope: Should demonstrate a clear mastery of skills related to academic work and writing. All of the above ILOs.
Completion: To pass this module, the examination has to be passed with at least 45%

8.1.2 Data Collection and Empirical Research Methodologies

<table>
<tr><td colspan="2">Module Name
Data Collection and Empirical Research Methodologies</td><td>Module Code
CTMS-MET-06</td><td>Level (type)
Year 2 (Methods)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTMS-06 | Data Collection and Empirical Research Methodologies | Lecture | 5</td></tr>
<tr><td>Module Coordinator

Dr. Mandi Larsen</td><td colspan="2">Program Affiliation
• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory for IRPH, ISCP
Mandatory elective for IBA</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ None

Co-requisites
☒ None

Knowledge, Abilities, or Skills
• none</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Lecture (35 hours)
• Reading and self-study (30 hours)
• Questionnaire construction and data collection (35 hours)
• Preparation of research report (25 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

How exactly does empirical research work? This module gives an overview of the basic concepts and strategies involved in conducting empirical research in the social sciences. Students learn about basic approaches towards research, such as quantitative and qualitative, basic and applied, descriptive and explanatory research, and about core concepts of empirical research such as research ethics, generating hypotheses and hypothesis testing, measurement, and evaluation criteria such as reliability and validity. The module shows how these concepts and ideas are applied in the context of various research techniques. Students will actively apply this knowledge to the context of survey research, which is presumably the most widespread mode of gathering data in the social sciences and adjacent disciplines. Students will be familiarized with diverse aspects of sampling strategies, developing state-of-the-art questionnaires, and conducting cutting-edge survey research. Questionnaire construction for different data-gathering modalities (paper-pencil, telephone, face-to-face, online) will be discussed, as will their utilization in diverse populations (different social groups, cultures and languages). Students will carry out small empirical survey research projects putting these skills into practice.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module, students should be able to

1. describe basic concepts involved in conducting empirical research in the social sciences;
2. outline the empirical research process;
3. carry out a small research project from start to finish:
4. formulate an empirical research question, as well as develop relevant hypotheses;
5. address issues of random probability sampling;
6. recognize issues related to various modes of data collection;
7. construct a social science questionnaire;
8. compose a first empirical research report.</td></tr>
</table>

Indicative Literature

Fowler, F. J. (2015). Survey research methods. Thousand Oaks, CA: Sage.
Neumann, W. (2014). Social research methods: Qualitative and quantitative approaches (7th International Edition). Harlow: Pearson.
Gray, D. E. (2014). Doing research in the real world (3rd edition). London: Sage.
Picardie, C. A. & Masick, K. D. (2014). Research methods: Designing and conducting research with a real-world focus. London: Sage.

Usability and Relationship to other Modules

- This module builds on "Academic Writing and Academic Skills", where students gain critical skills related to academic writing, as well as to understanding empirical literature.
- This module also provides students with a first opportunity to carry out their own data collection, which will be helpful for the Bachelor Thesis.

Examination Type: Module Examination

Assessment type: Term paper

Length: 2500-3000 words
Weight: 100%

Scope: Should demonstrate: (1) knowledge of the empirical research process and its key concepts; (2) ability to carry out a small empirical research project; and (3) ability to accurately report on the research process in writing. All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%

8.1.3 Qualitative Research Methods

Module Name	**Module Code**	**Level (type)**	**CP**
Qualitative Research Methods	CTMS-MET-04	Year 2 (Methods)	5

Module Components

Number	Name	Type	CP
CTMS-04	Qualitative Research Methods	Lecture	5

Module Coordinator	**Program Affiliation**	**Mandatory Status**
Margrit Schreier	• CONSTRUCTOR Track Area	Mandatory for GEM, IBA, IRPH, ISCP,

Entry Requirements			**Frequency**	**Forms of Learning and Teaching**
Pre-requisites ☒ None	Co-requisites ☒ None	Knowledge, Abilities, or Skills • none	Annually (Fall)	• In-class contact time (35 hours) • Private study (90 hours)
			Duration 1 semester	**Workload** 125 hours

Recommendations for Preparation

Patton, Michael Quinn (2015). Qualitative evaluation and research methods (4th ed.). Thousand Oaks etc.: Sage, chapter 2

Content and Educational Aims

Qualitative researchers explore the structure of everyday life and the meaning that events, other persons and their actions hold for us. To do so, they take an in-depth look at a few selected cases, such as organizations, campaigns, or people. We will look at the rationale and constructivist and interpretivist principles underlying qualitative research and from there move on to specific designs (such as grounded theory or ethnography), design principles (such as purposive strategies for selecting cases), and research methods. The focus of the module will be on learning about and trying out methods for collecting and analyzing qualitative data. Among methods for collecting qualitative data, relevant topics include semi-structured and narrative interviews, focus groups, observation, working with documents and with visual elements. Methods for analyzing qualitative data include, for example, coding, qualitative content analysis, discourse analysis, visual analysis, semiotics or iconography.
The module has a strong hands-on component. It is held in part as a seminar and in part as a lab where students apply the methods to data from their own fields of study. During the lab sessions, students are required to participate in and report on activities involving the application and testing of selected methods. For assessment and grading, students will carry out their own small research project, in which they bring to bear different methods to a topic of their choice.

Intended Learning Outcomes

By the end of this module, students should be able to

1. explain the principles underlying qualitative research;
2. apply basic qualitative approaches and designs;
3. identify and address ethical issues arising in qualitative research;
4. apply strategies for purposefully selecting participants and cases;
5. apply methods for collecting qualitative data;
6. apply methods for analyzing qualitative data;
7. know what to look for in evaluating qualitative research.

Indicative Literature

- Dresing, T., Pehl, T., & Schmieder, C. (2015). Manual (on) transcription. Transcription conventions, software guides, and practical hints for qualitative researchers. 3rd English edition. Marburg. Available under: http://www.audiotranskription.de/english/transcription-practicalguide.htm
- Flick, U. (2018) (ed.). The SAGE handbook of qualitative data collection. Los Angeles, CA: Sage.
- Flick, U. (2019). Introduction to qualitative research. 6th edition. London etc.: Sage.
- Patton, M.Q. (2015). Qualitative evaluation and research methods. 4th edition. Thousand Oaks etc.: Sage.
- Rose, G. (2016). Visual methodologies. 4th edition. London: Sage.

Usability and Relationship to other Modules

- Complements Method and Skills module Data Collection and Empirical Research Methodologies.
- This module prepares students for the GEM and IBA 2nd year module on organization and HRM as well as Marketing, the GEM 3rd year module on public and nonprofit management, the IBA 3rd year module on Contemporary Topics in Marketing, and the thesis.

Examination Type: Module Examination

Assessment Type: Project Report (including abstract, ethics statement, and laboratory report on methods implementation, findings, and evaluation) Length: 5.000 words (for groups of three students)
Weight: 100%

Scope: All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%

8.1.4 Applied Statistics with R

<table>
<tr><td colspan="2">Module Name
Applied Statistics with R</td><td>Module Code
CTMS-MET-03</td><td>Level (type)
Year 1 (Methods)</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTMS-03 | Applied Statistics with R | Lecture & Lab | 5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Adalbert Wilhelm</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory for ESSMER, GEM, IEM, ISCP and MDDA
Mandatory elective for IBA, IRPH</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites

☒ None

Co-requisites

☒ None

Knowledge, Abilities, or Skills
• none</td><td>Frequency

Annually (Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Lecture (17.5 hours)
• Lab (17.5 hours)
• Homework and self-study (90 hours)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation
Get acquainted to statistical thinking by watching online videos for introductory probability and statistics as well as paying attention whenever arguments are backed up by empirical data.</td></tr>
<tr><td colspan="5">Content and Educational Aims

We live in a world full of data and more and more decisions are taken based on a comprehensive analysis of data. A central method of data analysis is the use of models describing the relationship between a set of predictor variables and a response. This module provides a thorough introduction to quantitative data analysis covering graphical representations, numerical summary statistics, correlation, and regression models. The module also introduces the fundamental concepts of statistical inference. Students learn about the different data types, how to best visualize them and how to draw conclusions from the graphical representations. Students will learn in this module the ideas and techniques of regression models within the generalized linear model framework involving multiple predictors and co-variates. Students will learn how to become an intelligent user of statistical techniques from a prosumers perspective to assess the quality of presented statistical results and to produce high-quality analyses by themselves. By using illustrative examples from economics, engineering, and the natural and social sciences students will gain the relevant background knowledge for their specific major as well as an interdisciplinary glimpse of other research fields. The general objective of the module is to enable students to become skilled statistical modelers who are well versed in the various assumptions, limitations, and controversies of statistical models and their application. Regular exercises and practical sessions will corroborate the students' proficiency with the statistical software R.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

By the end of this module, students should be able to

1. apply basic techniques in statistical modeling and quantitative research methods
2. describe fundamental statistical concepts, procedures, their assumptions and statistical fallacies
3. explain the potential of using quantitative methods in all fields of applications;
4. express informed skepticism of the limitations of statistical reasoning;
5. interpret statistical modeling results in scientific publications;
6. perform basic and intermediate-level statistical analyses of data, using R.</td></tr>
<tr><td colspan="5">Indicative Literature

Michael J. Crawley (2013). The R Book, Second Edition. Hoboken: John Wiley & Sons.

Peter Daalgard (2008). Introductory Statistics with R. Berlin: Springer.</td></tr>
</table>

John Maindonald, W. John Braun (2010). Data Analysis and Graphics Using R – an Example-Based Approach, Third Edition, Cambridge Series. In Statistical and Probabilistic Mathematics. Cambridge: Cambridge University Press.

Christopher Gandrud (2015). Reproducible Research with R and RStudio, Second Edition. The R Series, Chapman & Hall/CRC Press.

Randall E. Schumacker (2014). Learning Statistics Using R. Thousand Oaks: Sage.

Charles Wheelan (2013). Naked Statistics: Stripping the Dread from The Data. New York: W.W. Norton & Company.

Usability and Relationship to other Modules

- This module introduces students to R in preparation for the 2nd year mandatory method module on econometrics and 3rd year GEM module on advanced econometrics; the statistics skills prepare students for all 2nd and 3rd year GEM modules and the thesis.

Examination Type: Module Examination

Type: Written examination

Duration: 120 min
Weight: 100%

During the examination students use the software R as an auxiliary resource approved by the Instructor of Record.

Scope: All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%.

8.2 New Skills

8.2.1 Logic (perspective I)

<table>
<tr><td colspan="2">Module Name
Logic (perspective I)</td><td>Module Code
CTNS-NSK-01</td><td>Level (type)
Constructor Track</td><td>CP
2.5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTNS-01 | Logic (perspective I) | Lecture (online) | 2.5</td></tr>
<tr><td>Module Coordinator
NN</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ none

Co-requisites
☒ none

Knowledge, Abilities, or Skills
•</td><td>Frequency

Annually (Spring/Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

Online lecture (17.5h)
Private study (45h)

Workload

62.5 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

Suppose a friend asks you to help solve a complicated problem? Where do you begin? Arguably, the first and most difficult task you face is to figure out what the heart of the problem actually is. In doing that you will look for structural similarities between the problem posed and other problems that arise in different fields that others may have addressed successfully. Those similarities may point you to a pathway for resolving the problem you have been asked to solve. But it is not enough to look for structural similarities. Sometimes relying on similarities may even be misleading. Once you've settled tentatively on what you take to be the heart of the matter, you will naturally look for materials, whether evidence or arguments, that you believe is relevant to its potential solution. But the evidence you investigate of course depends on your formulation of the problem, and your formulation of the problem likely depends on the tools you have available – including potential sources of evidence and argumentation. You cannot ignore this interactivity, but you can't allow yourself to be hamstrung entirely by it. But there is more. The problem itself may be too big to be manageable all at once, so you will have to explore whether it can be broken into manageable parts and if the information you have bears on all or only some of those parts. And later you will face the problem of whether the solutions to the particular sub problems can be put together coherently to solve the entire problem taken as a whole.

What you are doing is what we call engaging in computational thinking. There are several elements of computational thinking illustrated above. These include: Decomposition (breaking the larger problem down into smaller ones); Pattern recognition (identifying structural similarities); Abstraction (ignoring irrelevant particulars of the problem): and Creating Algorithms), problem-solving formulas.

But even more basic to what you are doing is the process of drawing inferences from the material you have. After all, how else are you going to create a problem-solving formula, if you draw incorrect inferences about what information has shown and what, if anything follows logically from it. What you must do is apply the rules of logic to the information to draw inferences that are warranted.

We distinguish between informal and formal systems of logic, both of which are designed to indicate fallacies as well as warranted inferences. If I argue for a conclusion by appealing to my physical ability to coerce you, I prove nothing about the truth of what I claim. If anything, by doing so I display my lack of confidence in my argument. Or if the best I can do</td></tr>
</table>

is berate you for your skepticism, I have done little more than offer an ad hominem instead of an argument. Our focus will be on formal systems of logic, since they are at the heart of both scientific argumentation and computer developed algorithms. There are in fact many different kinds of logic and all figure to varying degrees in scientific inquiry. There are inductive types of logic, which purport to formalize the relationship between premises that if true offer evidence on behalf of a conclusion and the conclusion and are represented as claims about the extent to which the conclusion is confirmed by the premises. There are deductive types of logic, which introduce a different relationship between premise and conclusion. These variations of logic consist in rules that if followed entail that if the premises are true then the conclusion too must be true.

There are also modal types of logic which are applied specifically to the concepts of necessity and possibility, and thus to the relationship among sentences that include either or both those terms. And there is also what are called deontic logic, a modification of logic that purport to show that there are rules of inference that allow us to infer what we ought to do from facts about the circumstances in which we find ourselves. In the natural and social sciences most of the emphasis has been placed on inductive logic, whereas in math it is placed on deductive logic, and in modern physics there is an increasing interest in the concepts of possibility and necessity and thus in modal logic. The humanities, especially normative discussions in philosophy and literature are the province of deontic logic.

This module will also take students through the central aspects of computational thinking, as it is related to logic; it will introduce the central concepts in each, their relationship to one another and begin to provide the conceptual apparatus and practical skills for scientific inquiry and research.

Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will be able to

1. apply the various principles of logic and expand them to computational thinking.
2. understand the way in which logical processes in humans and in computers are similar and different at the same time.
3. apply the basic rules of first-order deductive logic and employ them rules in the context of creating a scientific or social scientific study and argument.
4. employ those rules in the context of creating a scientific or social scientific study and argument.

Indicative Literature

Frege, Gottlob (1879), Begriffsschrift, eine der arithmetischen nachgebildete Formelsprache des reinen Denkens [Translation: A Formal Language for Pure Thought Modeled on that of Arithmetic],Halle an der Salle: Verlag von Louis Nebert.

Gödel, Kurt (1986), Russels mathematische Logik. In: Alfred North Whitehead, Bertrand Russell: Principia Mathematica. Vorwort, S. V–XXXIV. Suhrkamp.

Leeds, Stephen. "George Boolos and Richard Jeffrey. Computability and logic. Cambridge University Press, New York and London1974, x+ 262 pp." The Journal of Symbolic Logic 42.4 (1977): 585-586.

Kubica, Jeremy. Computational fairy tales. Jeremy Kubica, 2012.

McCarthy, Timothy. "Richard Jeffrey. Formal logic: Its scope and limits. of XXXVIII 646. McGraw-Hill Book Company, New York etc. 1981, xvi+ 198 pp." The Journal of Symbolic Logic 49.4 (1984): 1408-1409.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written Examination

Duration/Length: 60 min
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.2 Logic (perspective II)

<table>
<tr><td colspan="2">Module Name
Logic (perspective II)</td><td>Module Code
CTNS-NSK-02</td><td>Level (type)
Constructor Track</td><td>CP
2.5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTNS-02 | Logic (perspective II) | Lecture (online) | 2.5</td></tr>
<tr><td>Module Coordinator</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites: ☒ none
Co-requisites: ☒ none
Knowledge, Abilities, or Skills: •</td><td>Frequency

Annually (Spring/Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

Online lecture (17.5h)
Private study (45h)

Workload

62.5 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

The focus of this module is on formal systems of logic, since they are at the heart of both scientific argumentation and computer developed algorithms. There are in fact many kinds of logic and all figure to varying degrees in scientific inquiry. There are inductive types of logic, which purport to formalize the relationship between premises that if true offer evidence on behalf of a conclusion and the conclusion and are represented as claims about the extent to which the conclusion is confirmed by the premises. There are deductive types of logic, which introduce a different relationship between premise and conclusion. These variations of logic consist in rules that if followed entail that if the premises are true then the conclusion too must be true.

This module introduces logics that go beyond traditional deductive propositional logic and predicate logic and as such it is aimed at students who are already familiar with basics of traditional formal logic. The aim of the module is to provide an overview of alternative logics and to develop a sensitivity that there are many different logics that can provide effective tools for solving problems in specific application domains.
The module first reviews the principles of a traditional logic and then introduces many-valued logics that distinguish more than two truth values, for example true, false, and unknown. Fuzzy logic extends traditional logic by replacing truth values with real numbers in the range 0 to 1 that are expressing how strong the believe into a proposition is. Modal logics introduce modal operators expressing whether a proposition is necessary or possible. Temporal logics deal with propositions that are qualified by time. Once can view temporal logics as a form of modal logics where propositions are qualified by time constraints. Interval temporal logic provides a way to reason about time intervals in which propositions are true.
The module will also investigate the application of logic frameworks to specific classes of problems. For example, a special subset of predicate logic, based on so-called Horn clauses, forms the basis of logic programming languages such as Prolog. Description logics, which are usually decidable logics, are used to model relationships and they have applications in the semantic web, which enables search engines to reason about resources present on the Internet.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will be able to

1. apply the various principles of logic</td></tr>
</table>

2. explain practical relevance of non-standard logic
3. describe how many-valued logic extends basic predicate logic
4. apply basic rules of fuzzy logic to calculate partial truth values
5. sketch basic rules of temporal logic
6. implement predicates in a logic programming language
7. prove some simple non-standard logic theorems

Indicative Literature

Bergmann, Merry. “An Introduction to Many-Valued and Fuzzy Logic: Semantics, Algebras, and Derivation Systems”, Cambridge University Press, April 2008.

Sterling, Leon S., Ehud Y. Shapiro, Ehud Y. "The Art of Prolog", 2nd edition, MIT Press, March 1994.

Fisher, Michael. “An Introduction to Practical Formal Methods Using Temporal Logic”, Wiley, Juli 2011.

Baader, Franz. "The Description Logic Handbook: Theory Implementation and Applications", Cambridge University Press, 2nd edition, May 2010.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written Examination

Duration/Length: 60 min
Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.3 Causation and Correlation (perspective I)

<table>
<tr><td colspan="3">Module Name
Causation and Correlation (perspective I)</td><td>Module Code
CTNS-NSK-03</td><td>Level (type)
Constructor Track</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTNS-03 | Causation and Correlation | Lecture (online) | 2.5</td></tr>
<tr><td colspan="2">Module Coordinator

Prof. Dr. Jules Coleman</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ none
Co-requisites: ☒ none
Knowledge, Abilities, or Skills: •</td><td>Frequency

Annually (Spring/Fall)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

Online lecture (17.5h)
Private study (45h)

Workload

62.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation</td></tr>
<tr><td colspan="6">Content and Educational Aims

In many ways, life is a journey. And also, as in other journeys, our success or failure depends not only on our personal traits and character, our physical and mental health, but also on the accuracy of our map. We need to know what the world we are navigating is actually like, the how, why and the what of what makes it work the way it does. The natural sciences provide the most important tool we have developed to learn how the world works and why it works the way it does. The social sciences provide the most advanced tools we have to learn how we and other human beings, similar in most ways, different in many others, act and react and what makes them do what they do. In order for our maps to be useful, they must be accurate and correctly reflect the way the natural and social worlds work and why they work as they do.

The natural sciences and social sciences are blessed with enormous amounts of data. In this way, history and the present are gifts to us. To understand how and why the world works the way it does requires that we are able to offer an explanation of it. The data supports a number of possible explanations of it. How are we to choose among potential explanations? Explanations, if sound, will enable us to make reliable predictions about what the future will be like, and also to identify many possibilities that may unfold in the future. But there are differences not just in the degree of confidence we have in our predictions, but in whether some of them are necessary future states or whether all of them are merely possibilities? Thus, there are three related activities at the core of scientific inquiry: understanding where we are now and how we got here (historical); knowing what to expect going forward (prediction); and exploring how we can change the paths we are on (creativity).

At the heart of these activities are certain fundamental concepts, all of which are related to the scientific quest to uncover immutable and unchanging laws of nature. Laws of nature are thought to reflect a causal nexus between a previous event and a future one. There are also true statements that reflect universal or nearly universal connections between events past and present that are not laws of nature because the relationship they express is that of a correlation between events. A working thermostat accurately allows us to determine or even to predict the temperature in the room in which it is located, but it does not explain why the room has the temperature it has. What then is the core difference between causal relationships and correlations? At the same time, we all recognize that given where we are now there are many possible futures for each of us, and even had our lives gone just the slightest bit differently than they have, our present state could well have been very different than it is. The relationship between possible pathways between events that have not materialized but could have is expressed through the idea of counterfactual.</td></tr>
</table>

Creating accurate roadmaps, forming expectations we can rely on, making the world a more verdant and attractive place requires us to understand the concepts of causation, correlation, counterfactual explanation, prediction, necessity, possibility, law of nature and universal generalization. This course is designed precisely to provide the conceptual tools and intellectual skills to implement those concepts in our future readings and research and ultimately in our experimental investigations, and to employ those tools in various disciplines.

Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will be able to

1. formulate testable hypotheses that are designed to reveal causal connections and those designed to reveal interesting, important and useful correlations.
2. distinguish scientifically interesting correlations from unimportant ones.
3. apply critical thinking skills to evaluate information.
4. understand when and why inquiry into unrealized possibility is important and relevant.

Indicative Literature

Thomas S. Kuhn: The Structure of Scientific Revolutions, Nelson, fourth edition 2012;

Goodman, Nelson. Fact, fiction, and forecast. Harvard University Press, 1983;

Quine, Willard Van Orman, and Joseph Silbert Ullian. The web of belief. Vol. 2. New York: Random house, 1978.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written Examination

Duration/Length: 60 min
Weight: 100%

Scope: All intended learning outcomes of the module

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.4 Causation and Correlation (perspective II)

<table>
<tr><td colspan="2">Module Name
Causation and Correlation (perspective II)</td><td>Module Code
CTNS-NSK-04</td><td>Level (type)
Constructor Track</td><td>CP
2.5</td></tr>
<tr><td colspan="5">Module Components</td></tr>
<tr><td>Number</td><td>Name</td><td colspan="2">Type</td><td>CP</td></tr>
<tr><td>CTNS-04</td><td>Causation and Correlations</td><td colspan="2">Lecture (online)</td><td>2.5</td></tr>
<tr><td>Module Coordinator

Dr. Keivan Mallahi-Karai
Dr. Eoin Ryan Dr. Irina Chiaburu</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites

☒ none</td><td>Co-requisites

☒ none</td><td>Knowledge, Abilities, or Skills

• Basic probability theory</td><td>Frequency

Annually

(Spring/Fall)

Duration

1 semester</td><td>Forms of Learning and Teaching

Online lecture (17.5h)
Private study (45h)

Workload

62.5 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

Causality or causation is a surprisingly difficult concept to understand. David Hume famously noted that causality is a concept that our science and philosophy cannot do without, but it is equally a concept that our science and philosophy cannot describe. Since Hume, the problem of cause has not gone away, and sometimes seems to get even worse (e.g., quantum mechanics confusing previous notions of causality). Yet, ways of doing science that lessen our need to explicitly use causality have become very effective (e.g., huge developments in statistics). Nevertheless, it still seems that the concept of causality is at the core of explaining how the world works, across fields as diverse as physics, medicine, logistics, the law, sociology, and history – and ordinary daily life – through all of which, explanations and predictions in terms of cause and effect remain intuitively central.

Causality remains a thorny problem but, in recent decades, significant progress has occurred, particularly in work by or inspired by Judea Pearl. This work incorporates many 20th century developments, including statistical methods – but with a reemphasis on finding the why, or the cause, behind statistical correlations –, progress in understanding the logic, semantics and metaphysics of conditionals and counterfactuals, developments based on insights from the likes of philosopher Hans Reichenbach or biological statistician Sewall Wright into causal precedence and path analysis, and much</td></tr>
</table>

more. The result is a new toolkit to identify causes and build causal explanations. Yet even as we get better at identifying causes, this raises new (or old) questions about causality, including metaphysical questions about the nature of causes (and effects, events, objects, etc), but also questions about what we really use causality for (understanding the world as it is or just to glean predictive control of specific outcomes), about how causality is used differently in different fields and activities (is cause in physics the same as that in history?), and about how other crucial concepts relate to our concept of cause (space and time seem to be related to causality, but so do concepts of legal and moral responsibility).

This course will introduce students to the mathematical formalism derived from Pearl's work, based on directed acyclic graphs and probability theory. Building upon previous work by Reichenbach and Wright, Pearl defines a "a calculus of interventions" of "do-calculus" for talking about interventions and their relation to causation and counterfactuals. This model has been applied in various areas ranging from econometrics to statistics, where acquiring knowledge about causality is of great importance.

At the same time, the course will not forget some of the metaphysical and epistemological issues around cause, so that students can better critically evaluate putative causal explanations in their full context. Abstractly, such issues involve some of the same philosophical questions Hume already asked, but more practically, it is important to see how metaphysical and epistemological debates surrounding the notion of cause affect scientific practice, and equally if not more importantly, how scientific practice pushes the limits of theory. This course will look at various ways in which empirical data can be transformed into explanations and theories, including the variance approach to causality (characteristic of the positivistic quantitative paradigm), and the process theory of causality (associated with qualitative methodology). Examples and case studies will be relevant for students of the social sciences but also students of the natural/physical world as well.

Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will

1. have a clear understanding of the history of causal thinking.
2. be able to form a critical understanding of the key debates and controversies surrounding the idea of causality.
3. be able to recognize and apply probabilistic causal models.
4. be able to explain how understanding of causality differs among different disciplines.
5. be able demonstrate how theoretical thinking about causality has shaped scientific practices.

Indicative Literature

Paul, L. A. and Ned Hall. Causation: A User's Guide. Oxford University Press 2013.

Pearl, Judea. Causality: Models, Reasoning and Inference. Cambridge University Press 2009

Pearl, Judea, Glymour Madelyn and Jewell, Nicolas. Causal Inference in Statistics: A Primer. Wiley 2016

llari, Phyllis McKay and Federica Russo. Causality: Philosophical Theory Meets Scientific Practice. Oxford University Press 2014.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment: Written examination Duration/Length: 60 min

Weight: 100 %

Scope: All intended learning outcomes of the module

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.5 Linear Model and Matrices

Module Name			**Module Code**	**Level (type)**	**CP**
Linear Model and Matrices			CTNS-NSK-05	Constructor Track	5
Module Components					
Number	Name			Type	CP
CTNS-05	Linear models and matrices			Seminar	5
Module Coordinator	**Program Affiliation**			**Mandatory Status**	
Prof. Dr. Marc-Thorsten Hütt	• CONSTRUCTOR Track Area			Mandatory elective	
Entry Requirements			**Frequency**	**Forms of Learning and Teaching**	
Pre-requisites Logic Causation & Correlation	Co-requisites ☒ none	Knowledge, Abilities, or Skills •	Annually (Spring/Fall)	Online lecture (35h) Private Study (90h)	
			Duration	**Workload**	
			1 Semester	125 hours	

Recommendations for Preparation

Content and Educational Aims

There are no universal 'right skills'. But the notion of linear models and the avenue to matrices and their properties can be useful in diverse disciplines to implement a quantitative, computational approach. Some of the most popular data and systems analysis strategies are built upon this framework. Examples include principal component analysis (PCA), the optimization techniques used in Operations Research (OR), the assessment of stable and unstable states in nonlinear dynamical systems, as well as aspects of machine learning.

Here we introduce the toolbox of linear models and matrix-based methods embedded in a wide range of transdisciplinary applications (part 1). We describe its foundation in linear algebra (part 2) and the range of tools and methods derived from this conceptual framework (part 3). At the end of the course, we outline applications to graph theory and machine learning (part 4). Matrices can be useful representations of networks and of system of linear equations. They are also the core object of linear stability analysis, an approach used in nonlinear dynamics. Throughout the course, examples from neuroscience, social sciences, medicine, biology, physics, chemistry, and other fields are used to illustrate these methods.

A strong emphasis of the course is on the sensible usage of linear approaches in a nonlinear world. We will critically reflect the advantages as well as the disadvantages and limitations of this method. Guiding questions are: How appropriate is a linear approximation of a nonlinear system? What do you really learn from PCA? How reliable are the optimal states obtained via linear programming (LP) techniques?

This debate is embedded in a broader context: How does the choice of a mathematical technique confine your view on the system at hand? How, on the other hand, does it increase your capabilities of analyzing the system (due to software available for this technique, the ability to compare with findings from other fields built upon the same technique and the volume of knowledge about this technique)?

In the end, students will have a clearer understanding of linear models and matrix approaches in their own discipline, but they will also see the full transdisciplinarity of this topic. They will make better decisions in their choice of data analysis methods and become mindful of the challenges when going from a linear to a nonlinear thinking.

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. apply the concept of linear modeling in their own discipline
2. distinguish between linear and nonlinear interpretation strategies and understand the range of applicability of linear models
3. make use of data analysis / data interpretation strategies from other disciplines, which are derived from linear algebra
4. be aware of the ties that linear models have to machine learning and network theory

   Note that these four ILOs can be loosely associated with the four parts of the course indicated above
5.

Indicative Literature

Part 1:

material from Linear Algebra for Everyone, Gilbert Strang, Wellesley-Cambridge Press, 2020

Part 2:

material from Introduction to Linear Algebra (5th Edition), Gilbert Strang, Cambridge University Press, 2021

Part 3:

Mainzer, Klaus. "Introduction: from linear to nonlinear thinking." Thinking in Complexity: The Computational Dynamics of Matter, Mind and Mankind (2007): 1-16.

material from Mathematics of Big Data: Spreadsheets, Databases, Matrices, and Graphs, Jeremy Kepner, Hayden Jananthan, The MIT Press, 2018

material from Introduction to Linear Algebra (5th Edition), Gilbert Strang, Cambridge University Press, 2021

Part 4:

material from Linear Algebra and Learning from Data, Gilbert Strang, Wellesley-Cambridge Press, 2019

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment: Written examination

Duration/Length: 120 min

Weight: 100 %

Scope: All intended learning outcomes of the module

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.6 Complex Problem Solving

<table>
<tr><td colspan="2">Module Name
Complex Problem Solving</td><td>Module Code
CTNS-NSK-06</td><td>Level (type)
Constructor Track</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components</td></tr>
<tr><td>Number</td><td colspan="2">Name</td><td>Type</td><td>CP</td></tr>
<tr><td>CTNS-06</td><td colspan="2">Complex Problem Solving</td><td>Lecture (online)</td><td>5</td></tr>
<tr><td>Module Coordinator
Marco Verweij</td><td colspan="2">Program Affiliation
• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status
Mandatory elective</td></tr>
<tr><td colspan="2">Entry Require-ments
Pre-requisites
Logic
Causation & Cor-relation</td><td>Co-requisites
☒ none</td><td>Knowledge, Abilities, or Skills
• Being able to read primary ac-ademic literature
• Willingness to engage in team-work</td><td>Frequency
Annually
(Spring/Fall)
Duration
1 semester</td><td>Forms of Learning and Teaching
Online Lectures (35h)
Private Study (90h)
Workload
125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation
Please read: Camillus, J. (2008). Strategy as a wicked problem. Harvard Business Review 86: 99-106; Rogers, P. J. (2008). Using programme theory to evaluate complicated and complex aspects of interventions. Evaluation, 14, 29–48.</td></tr>
<tr><td colspan="5">Content and Educational Aims
Complex problems are, by definition, non-linear and/or emergent. Some fifty years ago, scholars such as Herbert Simon began to argue that societies around the world had developed an impressive array of tools with which to solve simple and even complicated problems, but still needed to develop methods with which to address the rapidly in-creasing number of complex issues. Since then, a variety of such methods has emerged. These include ‘serious games’ developed in computer science, ‘multisector systems analysis’ applied in civil and environmental engineer-ing, ‘robust decision-making’ proposed by the RAND Corporation, ‘design thinking’ developed in engineering and business studies, ‘structured problem solving’ used by McKinsey & Co., ‘real-time technology assessment’ advo-cated in science and technology studies, and ‘deliberative decision-making’ emanating from political science.

In this course, students first learn to distinguish between simple, complicated and complex problems. They also become familiar with the ways in which a particular issue can sometimes shift from one category into another. In addition, the students are introduced to the various roles that scientists can play in resolving complex problems. Finally, and most importantly, the participants learn to apply several tools for resolving complex problems. Through-out the course examples and applications will be used. When possible, guest lectures will be offered by experts on a particular tool for tackling complex issues. For the written, take-home exam, students will have to select a specific</td></tr>
</table>

complex problem, analyse it and come up with a recommendation – in addition to answering several questions about the material learned

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. Identify a complex problem and develop an acceptable recommendation for resolving it.
2. Understand the roles that scientists can play in the resolution of a complex problem.

Indicative Literature

Chia, A. (2019). Distilling the essence of the McKinsey way: The problem-solving cycle. Management Teaching Review 4(4): 350-377.

Den Haan, J., van der Voort, M.C., Baart, F., Berends, K.D., van den Berg, M.C., Straatsma, M.W., Geenen, A.J.P., & Hulscher, S.J.M.H. (2020). The virtual river game: Gaming using models to collaboratively explore river management complexity, Environmental Modelling & Software 134, 104855,

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S., & Walker, B. (2002). Resilience and sustainable development: Building adaptive capacity in a world of transformations. AMBIO: A Journal of the Human Environment 31(5): 437-440.

Ostrom, E. (2010). Beyond markets and states: Polycentric governance of complex economic systems. American Economic Review 100(3): 641-72.

Pielke, R. Jr. (2007). The honest broker: Making sense of science in policy and politics. Cambridge: Cambridge University Press.

Project Management Institute (2021). A guide to the project management body of knowledge (PMBOK® guide).

Schon, D. A., & Rein, M. (1994). Frame reflection: Toward the resolution of intractable policy controversies. New York: Basic Books.

Simon, H. A. (1973). The structure of ill structured problems. Artificial Intelligence 4(3-4): 181-201.

Verweij, M. & Thompson, M. (Eds.) (2006). Clumsy solutions for a complex world. London: Palgrave Macmillan.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written examination Duration: 120 min

Weight: 100%

Scope: All intended learning outcomes of the module.

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.7 Argumentation, Data Visualization and Communication (perspective I)

<table>
<tr><td colspan="2">Module Name
Argumentation, Data Visualization and Communication (perspective I)</td><td>Module Code
CTNS-NSK-07</td><td>Level (type)
Constructor Track</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components</td></tr>
<tr><td>Number</td><td colspan="2">Name</td><td>Type</td><td>CP</td></tr>
<tr><td>CTNS-07</td><td colspan="2">Argumentation, Data Visualization and Communication (perspective I)</td><td>Lecture (online)</td><td>5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Jules Coleman,
Prof Dr. Arvid Kappas</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
Logic
Causation & Correlation</td><td>Co-requisites

☒ none</td><td>Knowledge, Abilities, or Skills</td><td>Frequency

Annually (Spring/Fall)

Duration

1 semester</td><td>Forms of Learning and Teaching

Online Lectures (35h)
Private Study (90h)

Workload

125h</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">One must be careful not to confuse argumentation with being argumentative. The latter is an unattractive personal attribute, whereas the former is a requirement of publicly holding a belief, asserting the truth of a proposition, the plausibility of a hypothesis, or a judgment of the value of a person or an asset. It is an essential component of public discourse. Public discourse is governed by norms and one of those norms is that those who assert the truth of a proposition or the validity of an argument or the responsibility of another for wrongdoing open themselves up to good faith requests to defend their claims. In its most general meaning, argumentation is the requirement that one offer evidence in support of the claims they make, as well as in defense of the judgments and assessments they reach. There are different modalities of argumentation associated with different contexts and disciplines. Legal arguments have a structure of their own as do assessments of medical conditions and moral character. In each case, there are differences in the kind of evidence that is thought relevant and, more importantly, in the standards of assessment for whether a case has been successfully made. Different modalities of argumentation require can call for different modes of reasoning. We not only offer reasons in defense of or in support of beliefs we have, judgments we make and hypotheses we offer, but we reason from evidence we collect to conclusions that are warranted by them.

Reasoning can be informal and sometimes even appear unstructured. When we recognize some reasoning as unstructured yet appropriate what we usually have in mind is that it is not linear. Most reasoning we are familiar with is linear in character. From A we infer B, and from A and B we infer C, which all together support our commitment to D. The same form of reasoning applies whether the evidence for A, B or C is direct or circumstantial. What changes in these cases is perhaps the weight we give to the evidence and thus the confidence we have in drawing inferences from it.

Especially in cases where reasoning can be supported by quantitative data, wherever quantitative data can be obtained either directly or by linear or nonlinear models, the visualization of the corresponding data can become key in both, reasoning and argumentation. A graphical representation can reduce the complexity of argumentation and is considered a</td></tr>
</table>

must in effective scientific communication. Consequently, the course will also focus on smart and compelling ways for data visualization - in ways that go beyond what is typically taught in statistics or mathematics lectures. These tools are constantly developing, as a reflection of new software and changes in state of the presentation art. Which graph or bar chart to use best for which data, the use of colors to underline messages and arguments, but also the pitfalls when presenting data in a poor or even misleading manner. This will also help in readily identifying intentional mis-representation of data by others, the simplest to recognize being truncating the ordinate of a graph in order to exaggerate trends. This frequently leads to false arguments, which can then be readily countered.

There are other modalities of reasoning that are not linear however. Instead they are coherentist. We argue for the plausibility of a claim sometimes by showing that it fits in with a set of other claims for which we have independent support. The fit is itself the reason that is supposed to provide confidence or grounds for believing the contested claim.

Other times, the nature of reasoning involves establishing not just the fit but the mutual support individual items in the evidentiary set provide for one another. This is the familiar idea of a web of interconnected, mutually supportive beliefs. In some cases, the support is in all instances strong; in others it is uniformly weak, but the set is very large; in other cases, the support provided each bit of evidence for the other is mixed: sometimes strong, sometimes weak, and so on.

There are three fundamental ideas that we want to extract from this segment of the course. These are (1) that argumentation is itself a requirement of being a researcher who claims to have made findings of one sort or another; (2) that there are different forms of appropriate argumentation for different domains and circumstances; and (3) that there are different forms of reasoning on behalf of various claims or from various bits of evidence to conclusions: whether those conclusions are value judgments, political beliefs, or scientific conclusions. Our goal is to familiarize you with all three of these deep ideas and to help you gain facility with each.

Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will be able to

1. Distinguish among different modalities of argument, e.g. legal arguments, vs. scientific ones.
2. Construct arguments using tools of data visualization.
3. Communicate conclusions and arguments concisely, clearly and convincingly.

Indicative Literature

- Tufte, E.R. (1985). The visual display of quantitative information. The Journal for Healthcare Quality (JHQ), 7(3), 15.
- Cairo, A (2012). The Functional Art: An introduction to information graphics and visualization. New Ridders.
- Knaflic, C.N. (2015). Storytelling with data: A data visualization guide for business professionals. John Wiley & Sons.

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written Examination — Duration/Length: 120 (min) — Weight: 100%

Scope: All intended learning outcomes of the module

Completion: To pass this module, the examination has to be passed with at least 45%

8.2.8 Argumentation, Data Visualization and Communication (perspective II)

<table>
<tr><td colspan="3">Module Name
Argumentation, Data Visualization and Communication (perspective II)</td><td>Module Code
CTNS-NSK-08</td><td>Level (type)
Constructor Track</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTNS-08 | Communication, Interaction, and Argumentation (perspective II) | Lecture (online) | 5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Jules Coleman,
Prof Dr. Arvid Kappas</td><td colspan="3">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective for all UG students (one perspective must be chosen)</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: Logic; Causation & Correlation
Co-requisites: ☒ none
Knowledge, Abilities, or Skills:
• ability and openness to engage in interactions
• media literacy, critical thinking and a proficient handling of data sources
• own research in academic literature</td><td>Frequency

annually

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Lecture (35 hours)
• Tutorial of the lecture (10 hours)
• Private study for the lecture (80 hours)

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation</td></tr>
<tr><td colspan="6">Content and Educational Aims
Humans are a social species and interaction is crucial throughout the entire life span. While much of human communication involves language, there is a complex multichannel system of nonverbal communication that enriches linguistic content, provides context, and is also involved in structuring dynamic interaction. Interactants achieve goals by encoding information that is interpreted in the light of current context in transactions with others. This complexity implies also that there are frequent misunderstandings as a sender's intention is not fulfilled. Students in this course will learn to understand the structure of communication processes in a variety of formal and informal contexts. They will learn what constitutes challenges to achieving successful communication and to how to communicate effectively, taking the context and specific requirements for a target audience into consideration. These aspects will be discussed also in the scientific context, as well as business, and special cases, such as legal context – particularly with view to argumentation theory.

Communication is a truly transdisciplinary concept that involves knowledge from diverse fields such as biology, psychology, neuroscience, linguistics, sociology, philosophy, communication and information science. Students will learn what these different disciplines contribute to an understanding of communication and how theories from these fields can be applied in the real world. In the context of scientific communication, there will also be a focus on visual communication of data in different disciplines. Good practice examples will be contrasted with typical errors to facilitate successful communication also with view to the Bachelor's thesis.</td></tr>
</table>

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. Analyze communication processes in formal and informal contexts.
2. Identify challenges and failures in communication.
3. Design communications to achieve specified goals to specific target groups.
4. Understand the principles of argumentation theory.
5. Use data visualization in scientific communications.

Indicative Literature

- Joseph A. DeVito: The Interpersonal Communication Book (Global edition, 16th edition), 2022
- Steven L. Franconeri, Lace M. Padilla, Priti Shah, Jeffrey M. Zacks, and Jessica Hullman: The Science of Visual Data Communication: What Works Psychological Science in the Public Interest, 22(3), 110–161, 2022
- Douglas Walton: Argumentation Theory – A Very Short Introduction. In: Simari, G., Rahwan, I. (eds) Argumentation in Artificial Intelligence. Springer, Boston, MA, 2009

Examination Type: Module Examination

Assessment Type: Digital submission of asynchronous presentation, including reflection

Duration/Length: Asynchronous/Digital submission

Weight: 100%

Scope: All intended learning outcomes of the module

Module achievement: Asynchronous presentation on a topic relating to the major of the student, including a reflection including concept outlining the rationale for how arguments are selected and presented based on a particular target group for a particular purpose. The presentation shall be multimedial and include the presentation of data

The module achievement ensures sufficient knowledge about key concepts of effective communication including a reflection on the presentation itself
Completion: To pass this module, the examination has to be passed with at least 45%.

8.2.9 Agency, Leadership, and Accountability

<table>
<tr><td colspan="2">Module Name
Agency, Leadership, and Accountability</td><td>Module Code
CTNS-NSK-09</td><td>Level (type)
Constructor Track</td><td>CP
5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTNS-09 | Agency, Leadership, and Accountability | Lecture (online) | 5</td></tr>
<tr><td>Module Coordinator

Prof. Dr. Jules Coleman</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites: ☒ none
Co-requisites: ☒ none
Knowledge, Abilities, or Skills</td><td>Frequency

Annually (Spring/Fall)

Duration</td><td colspan="2">Forms of Learning and Teaching

Online Lectures (35h)
Private Study (90h)

Workload

125 hours</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims

Each of us is judged by the actions we undertake and held to account for the consequences of them. Sometimes we may be lucky and our bad acts don't have harmful effects on others. Other times we may be unlucky and reasonable decisions can lead to unexpected or unforeseen adverse consequences for others. We are therefore held accountable both for choices and for outcomes. In either case, accountability expresses the judgment that we bear responsibility for what we do and what happens as a result. But our responsibility and our accountability in these cases is closely connected to the idea that we have agency.

Agency presumes that we are the source of the choices we make and the actions that result from those choices. For some, this may entail the idea that we have free will. But there is scientific world view that holds that all actions are determined by the causes that explain them, which is the idea that if we knew the causes of your decisions in advance, we would know the decision you would make even before you made it. If that is so, how can your choice be free? And if it is not free, how can you be responsible for it? And if you cannot be responsible, how can we justifiably hold you to account for it?

These questions express the centuries old questions about the relationship between free will and a determinist world view: for some, the conflict between a scientific world view and a moral world view.

But we do not always act as individuals. In society we organize ourselves into groups: e.g. tightly organized social groups, loosely organized market economies, political societies, companies, and more. These groups have structure. Some individuals are given the responsibility of leading the group and of exercising authority. But one can exercise authority over others in a group merely by giving orders and threatening punishment for non-compliance.

Exercising authority is not the same thing as being a leader? For one can lead by example or by encouraging others to exercise personal judgment and authority. What then is the essence of leadership?</td></tr>
</table>

Intended Learning Outcomes

Students acquire transferable and key skills in this module.

By the end of this module, the students will be able to

1. understand how the social and moral world views that rely on agency and responsibility are compatible, if they are, with current scientific world views.
2. understand how science is an economic sector, populated by large powerful organizations that set norms, fund research agendas
3. identify the difference between being a leader of others or of a group – whether a research group or a lab or a company – and being in charge of the group.
4. learn to be a leader of others and groups. Understand that when one graduates one will enter not just a field of work but a heavily structured set of institutions and that one's agency and responsibility for what happens, what work gets done, its quality and value, will be affected accordingly.

Indicative Literature

Hull, David L. "Science as a Process." Science as a Process. University of Chicago Press, 2010;

Feinberg, Joel. "Doing & deserving; essays in the theory of responsibility." (1970).

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written examination Duration/Length: 120 min
Weight: 100%

Scope: All intended learning outcomes of the module
Completion: To pass this module, the examination has to be passed with at least 45%

8.2.10 Community Impact Project

<table>
<tr><td colspan="3">Module Name
Community Impact Project</td><td>Module Code
CTNS-CIP-10</td><td>Level (type)
Constructor Track</td><td>CP
5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTNS-10 | Community Impact Project | Project | 5</td></tr>
<tr><td colspan="2">Module Coordinator

CIP Faculty Coordinator</td><td colspan="2">Program Affiliation

• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ at least 15 CP from CORE modules in the major
Co-requisites: ☒ None
Knowledge, Abilities, or Skills:
• Basic knowledge of the main concepts and methodological instruments of the respective disciplines</td><td>Frequency

Annually (Fall / Spring)

Duration

1 semester</td><td colspan="2">Forms of Learning and Teaching

• Introductory, accompanying, and final events: 10 hours
• Self-organized teamwork and/or practical work in the community: 115 hours

Workload

125 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation

Develop or join a community impact project before the 5th or 6th semester based on the introductory events during the 4th semester by using the database of projects, communicating with fellow students and faculty, and finding potential companies, organizations, or communities to target.</td></tr>
<tr><td colspan="6">Content and Educational Aims

CIPs are self-organized, major-related, and problem-centered applications of students' acquired knowledge and skills. These activities will ideally be connected to their majors so that they will challenge the students' sense of practical relevance and social responsibility within the field of their studies. Projects will tackle real issues in their direct and/or broader social environment. These projects ideally connect the campus community to other communities, companies, or organizations in a mutually beneficial way.
Students are encouraged to create their own projects and find partners (e.g., companies, schools, NGOs), but will get help from the CIP faculty coordinator team and faculty mentors to do so. They can join and collaborate in interdisciplinary groups that attack a given issue from different disciplinary perspectives.
Student activities are self-organized but can draw on the support and guidance of both faculty and the CIP faculty coordinator team.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

The Community Impact Project is designed to convey the required personal and social competencies for enabling students to finish their studies at Constructor as socially conscious and responsible graduates (part of the Constructor University's mission) and to convey social and personal abilities to the students, including a practical awareness of the societal context and relevance of their academic discipline.

By the end of this project, students will be able to

1. understand the real-life issues of communities, organizations, and industries and relate them to concepts in their own discipline;
2. enhance problem-solving skills and develop critical faculty, create solutions to problems, and communicate these solutions appropriately to their audience;</td></tr>
</table>

3. apply media and communication skills in diverse and non-peer social contexts;
4. develop an awareness of the societal relevance of their own scientific actions and a sense of social responsibility for their social surroundings;
5. reflect on their own behavior critically in relation to social expectations and consequences;
6. work in a team and deal with diversity, develop cooperation and conflict skills, and strengthen their empathy and tolerance for ambiguity.

Indicative Literature

Not specified

Usability and Relationship to other Modules

- Students who have accomplished their CIP (6th semester) are encouraged to support their fellow students during the development phase of the next year's projects (4th semester).

Examination Type: Module Examination

Project Assessment, not numerically graded (pass/fail)
Scope: All intended learning outcomes of the module

8.3 Language and Humanities Modules

8.3.1 Languages

The descriptions of the language modules are provided in a separate document, the "Language Module Handbook" that can be accessed from the Constructor University's Language & Community Center internet sites (https://constructor.university/student-life/language-community-center/learning-languages).

8.3.2 Humanities

8.3.2.1 Introduction into Philosophical Ethics

<table>
<tr><td colspan="3">Module Name
Introduction to Philosophical Ethics</td><td>Module Code
CTHU-HUM-001</td><td>Level (type)
Year 1</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTHU-001 | Introduction to Philosophical Ethics | Lecture (online) | 2.5</td></tr>
<tr><td>Module Coordinator
Dr. Eoin Ryan</td><td colspan="3">Program Affiliation
• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status
Mandatory elective</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ none
Co-requisites: ☒ none
Knowledge, Abilities, or Skills: •</td><td>Frequency
Annually (Spring or Fall)

Duration
1 semester</td><td colspan="2">Forms of Learning and Teaching
Online lectures (17.5 h)
Private Study (45h)

Workload
62.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation</td></tr>
<tr><td colspan="6">The nature of morality – how to lead a life that is good for yourself, and how to be good towards others – has been a central debate in philosophy since the time of Socrates, and it is a topic that continues to be vigorously discussed. This course will introduce students to some of the key aspects of philosophical ethics, including leading normative theories of ethics (e.g. consequentialism or utilitarianism, deontology, virtue ethics, natural law ethics, egoism) as well as some important questions from metaethics (are useful and generalizable ethical claims even possible; what do ethical speech and ethical judgements actually do or explain) and moral psychology (how do abstract ethical principles do when realized by human psychologies). The course will describe ideas that are key factors in ethics (free will, happiness, responsibility, good, evil, religion, rights) and indicate various routes to progress in understanding ethics, as well as some of their difficulties.</td></tr>
</table>

Intended Learning Outcomes

Upon completion of this module, students will be able to

1. Describe normative ethical theories such as consequentialism, deontology and virtue ethics.
2. Discuss some metaethical concerns.
3. Analyze ethical language.
4. Highlight complexities and contradictions in typical ethical commitments.
5. Indicate common parameters for ethical discussions at individual and social levels.
6. Analyze notions such as objectivity, subjectivity, universality, pluralism, value.

Indicative Literature

Simon Blackburn, Being Good (2009)

Russ Shafer-Landay, A Concise Introduction to Ethics (2019)

Mark van Roojen, Metaethicas: A Contemporary Introduction (2015)

Usability and Relationship to other Modules

Examination Type: Module Examination

Assessment Type: Written Examination

Duration/Length: 60 min
Weight: 100%

Scope: All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%

8.3.2.2 Introduction to the Philosophy of Science

<table>
<tr><td colspan="3">Module Name
Introduction to the Philosophy of Science</td><td>Module Code
CTHU-HUM-002</td><td>Level (type)
Year 1</td><td>CP
2.5</td></tr>
<tr><td colspan="6">Module Components

Number | Name | Type | CP
CTHU-002 | Introduction to the Philosophy of Science | Lecture (online) | 2.5</td></tr>
<tr><td colspan="2">Module Coordinator
Dr. Eoin Ryan</td><td colspan="2">Program Affiliation
• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status
Mandatory elective</td></tr>
<tr><td colspan="3">Entry Requirements

Pre-requisites: ☒ none
Co-requisites: ☒ none
Knowledge, Abilities, or Skills</td><td>Frequency
Annually (Spring or Fall)

Duration
1 semester</td><td colspan="2">Forms of Learning and Teaching
Online lectures (17.5h)
Private Study (45h)

Workload
62.5 hours</td></tr>
<tr><td colspan="6">Recommendations for Preparation</td></tr>
<tr><td colspan="6">This humanities module will introduce students to some of the central ideas in philosophy of science. Topics will include distinguishing science from pseudo-science, types of inference and the problem of induction, the pros and cons of realism and anti-realism, the role of explanation, the nature of scientific change, the difference between natural and social sciences, scientism and the values of science, as well as some examples from philosophy of the special sciences (e.g., physics, biology).
The course aims to give students an understanding of how science produces knowledge, and some of the various contexts and issues which mean this process is never entirely transparent, neutral, or unproblematic. Students will gain a critical understanding of science as a human practice and technology; this will enable them both to better understand the importance and success of science, but also how to properly critique science when appropriate.</td></tr>
<tr><td colspan="6">Intended Learning Outcomes

Upon completion of this module, students will be able to
1. Understand key ideas from the philosophy of science.
2. Discuss different types of inference and rational processes.
3. Describe differences between how the natural sciences, social sciences and humanities discover knowledge.
4. Identify ways in which science can be more and less value-laden.
5. Illustrate some important conceptual leaps in the history of science.</td></tr>
<tr><td colspan="6">Indicative Literature

Peter Godfrey-Smith, Theory and Reality (2021)

James Ladyman, Understanding Philosophy of Science (2002)

Paul Song, Philosophy of Science: Perspectives from Scientists (2022)</td></tr>
<tr><td colspan="6">Usability and Relationship to other Modules</td></tr>
<tr><td colspan="6">Examination Type: Module Examination

Assessment Type: Written Examination
Duration/Length: 60 min
Weight: 100%

Scope: All intended learning outcomes of the module.
Completion: To pass this module, the examination has to be passed with at least 45%</td></tr>
</table>

8.3.2.3 Introduction to Visual Culture

<table>
<tr><td colspan="2">Module Name
Introduction to Visual Culture</td><td>Module Code
CTHU-HUM-003</td><td>Level (type)
Year 1</td><td>CP
2.5</td></tr>
<tr><td colspan="5">Module Components

Number | Name | Type | CP
CTHU-003 | Introduction to Visual Culture | Lecture (online) | 2.5
</td></tr>
<tr><td>Module Coordinator

Irina Chiaburu</td><td colspan="2">Program Affiliation
• CONSTRUCTOR Track Area</td><td colspan="2">Mandatory Status

Mandatory elective</td></tr>
<tr><td colspan="2">Entry Requirements

Pre-requisites
☒ none

Co-requisites
☒ none

Knowledge, Abilities, or Skills
•</td><td>Frequency

Annually (Spring/Fall)

Duration
1 semester</td><td colspan="2">Forms of Learning and Teaching

Online Lecture

Workload

62.5 h</td></tr>
<tr><td colspan="5">Recommendations for Preparation</td></tr>
<tr><td colspan="5">Content and Educational Aims
Of the five senses, the sense of sight has for a long time occupied the central position in human cultures. As John Berger has suggested this could be because we can see and recognize the world around us before we learn how to speak. Images have been with us since the earliest days of the human history. In fact, the earliest records of human history are images found on cave walls across the world. We use images to capture abstract ideas, to catalogue and organize the world, to represent the world, to capture specific moments, to trace time and change, to tell stories, to express feelings, to better understand, to provide evidence and more. At the same time, images exert their power on us, seducing us into believing in their 'innocence', that is into forgetting that as representations they are also interpretations, i.e., a particular version of the world.

The purpose of this course is to explore multiple ways in which images and the visual in general mediate and structure human experiences and practices from more specialized discourses, e.g., scientific discourses, to more informal and personal day-to-day practices, such as self-fashioning in cyberspace. We will look at how social and historical contexts affect how we see, as well as what is visible and what is not. We will explore the centrality of the visual to the intellectual activity, from early genres of scientific drawing to visualizations of big data. We will examine whether one can speak of visual culture of protest, look at the relationship between looking and subjectivity and, most importantly, ponder the relationship between the visual and the real.</td></tr>
<tr><td colspan="5">Intended Learning Outcomes
Upon completion of this module, students will be able to
1. Understand a range of key concepts pertaining to visual culture, art theory and cultural analysis
2. Understand the role visuality plays in development and maintenance of political, social, and intellectual discourses
3. Think critically about images and their contexts
4. Reflect critically on the connection between seeing and knowing</td></tr>
<tr><td colspan="5">Indicative Literature

Berger, J., Blomberg, S., Fox, C., Dibb, M., & Hollis, R. (1973). Ways of seeing.
Foucault, M. (2002). The order of things: an archaeology of the human sciences (Ser. Routledge classics). Routledge.
Hunt, L. (2004). Politics, culture, and class in the French revolution: twentieth anniversary edition, with a new preface (Ser. Studies on the history of society and culture, 1). University of California Press.
Miller, V. (2020). Understanding digital culture (Second). SAGE.
Thomas, N. (1994). Colonialism's culture: anthropology, travel and government. Polity Press.</td></tr>
<tr><td colspan="5">Usability and Relationship to other Modules</td></tr>
</table>

Examination Type: Module Examination
Assessment: Written examination Duration/Length: 60 min. Weight: 100% Scope: all intended learning outcomes Completion: To pass this module, the examination has to be passed with at least 45%

9 Appendix

9.1 Intended Learning Outcomes Assessment-Matrix

Integrated Social and Cognitive Psychology (BSc)					Essentials of Cognitive Psychology	Essentials of Social Psychology	Neurobiology of Behavior	Judgment & Decision-Making	Health Psychology	Learning & Memory	Neuroscience Methods	Attention, Sensation, & Perception	Social Cognition	Cultural Psychology	Org. Psychology & Communication	H. Neuroscience Advanced Lab	Abnormal and Clinical Pschology	The Science of Happiness	Psychology of digital Interventions	Managing Demographic Change in Organizations	Intercultural Trainer Academy	Bachelor Thesis	Internship	CT Methods/Skills	CT New Skills	CT Language / Humanities
Semester					1	2	3/4	4	4	4	3/4	3	3	4	3/4	6	6	6	6	6		6	5	1-4	3-6	1-2
Mandatory/mandatory elective					m	m	me	me	me	me	me	me	me	me	me	me	me	me	me	me	me	m	m	m	m	m
Credits					7.5	7.5	5	5	5	5	5	5	5	5	5	2.5	2.5	2.5	2.5	2.5	5	15	15	20.0	20.0	10.0
	Competencies*																									
Program Learning Outcomes	**A**	**E**	**P**	**S**																						
Display mindfulness and self-awareness and engage in reflection regarding psychological practice.		x	x	x		x			x				x	x	x		x			x	x					
Adhere to professional values; recognize situations that challenge adherence to those values.		x	x	x		x	x		x		x		x	x			x			x	x					
Explain relationships between psychology and related sciences; identify avenues to collaboration.	x	x		x			x		x		x		x	x			x		x							
Explain inherent variability and diversity of psychological functioning and implications of the latter.	x						x	x		x			x				x		x	x	x					
Demonstrate critical understanding of core conceptualizations of cognition and social interaction.	x				x	x	x		x	x	x	x	x		x	x		x			x	x				
Apply quantitative theories to design behavior modification interventions in applied settings.	x								x	x	x						x	x		x	x	x	x			
Reason scientifically, analyze and explain the quality and role of evidence, critically judge about arguments in psychology.	x	x			x	x	x			x	x	x	x	x			x			x		x	x			
Critically discuss relationship between ideographic and nomothetic approaches and implications for interventions.	x	x		x	x	x			x					x	x						x					
Develop theoretical accounts with increased explanatory power or predictive validity by combining theories from different levels.		x			x	x			x		x		x	x	x		x			x		x	x			
Design and conduct (experimental) studies, analyze data and discuss findings.		x				x		x	x		x	x		x		x		x	x			x		x		
Demonstrate knowledge of ethical context of psychology; design research in accordance with codes of conduct by bodies such as APA.			x	x	x	x	x			x				x	x		x	x	x	x		x				
Reflect on new technologies and innovation in psychology; make decisions regarding their legitimacy, reliability and effectiveness.		x		x			x			x	x					x						x		x		
Communicate research ideas and findings by written, oral and visual means to psychologists and professionals from other disciplines.		x	x					x	x	x	x	x		x	x			x	x	x	x	x	x	x		
Articulate own values and expectations toward learning and professional development; undertake self-directed study.		x	x		x	x			x	x			x		x		x		x		x	x	x			
Articulate role of psychologists as change agents; demonstrate knowledge of barriers to change.		x	x						x				x	x	x					x						
Evaluate based on psychological evidence arguments in societal debates that pertain to diversity.			x	x									x	x	x				x	x	x					
Assessment Type																										
Written examination					x	x	x	x	x	x				x	x		x							x	x	x
Term paper											x		x								x			x		
Essay																										x
Project report										x													x	x		
Poster presentation																										
Laboratory Report											x	x	x	x		x										
Program Code																										
Oral examination																										x
Presentation																		x	x	x		x			x	x
Practical Assessment																										
Project Assessments																		x							x	
Portfolio Assessments																										
Bachelor Thesis																						x				
Module achievements											x															x

*Competencies: A-scientific/academic proficiency; E-competence for qualified employment; P-development of personality; S-competence for engagement in society

Figure 4: Intended Learning Outcomes Assessment-Matrix