LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Module Catalogue

Master's Program:

Psychology: Learning Sciences and Human Development

(Master of Science, M.Sc.)

(120 ECTS credits)

Based on the *Prüfungs- und Studienordnung* 2025

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Abbreviations and annotations

CP	Credit Points, ECTS-Punkte
ECTS	European Credit Transfer and Accumulation System
h	hours
SoSe	summer semester
SWS	contact hours
WiSe	winter semester
WP	compulsory elective course/module
P	mandatory course/module

1. The ECTS credits assigned in the Module Catalogue are designated as follows: credit points not listed in parentheses are awarded when the pertinent examination of the module or module parts have/has been completed successfully. Credit points in parentheses are listed for arithmetic purposes only.

2. The semester for taking a module can either be binding or may be considered as a recommendation, depending on the applicable data in Anlage 2 of the Prüfungs- und Studienordnung for your Program. In this Module catalog, the options are indicated as „scheduled semester“ and „recommended semester. “

3. Please note: The Module Catalogue is merely intended to serve as an orientation, whereas the provisions of the applicable version of the Prüfungs- und Studienordnung (in German only) of your Program are legally binding. See: www.lmu.de/studienangebot and select your Program.

Module: P 1 Perspectives on Learning and Human Development

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	P 1.1 Human Development	WiSe	30 h (2 SWS)	60 h	(3)
Seminar	P 1.2 Cognition, Instruction, Learning, and Technology	WiSe	30 h (2 SWS)	60 h	(3)
Seminar	P 1.3 Motivation and Emotion in Education	WiSe	30 h (2 SWS)	60 h	(3)
Seminar	P 1.4 Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 8 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 1
Duration	The completion of the module takes 1 semester.
Content	In this module, key approaches to teaching on learning are described, with reference to cognition, emotion, motivation, development, and to educational psychology. P 1.1 Human Development In this course, central theories and frameworks of human development are introduced on the basis of original texts. Their basic anthropological and epistemological assumptions will be discussed. Selected empirical studies will be discussed in order to shed light on the interplay between theory and empiricism. P 1.2 Cognition, Instruction, Learning, and Technology Central instructional approaches and concepts to learning, cognition, and teaching methods are

presented with digital media and discussed based on fundamental learning concepts and theories in this seminar. The design of conducive learning environments and the use of digital technologies can be used to support self-directed learning.

P 1.3 Motivation and Emotion in Education

The course is dedicated to models of motivation and emotion in education. The concepts of motivation and emotion in general are introduced, and a particular focus is placed on achievement contexts. Among others, self-determination theory, competence beliefs, expectancy-value theory of achievement motivation, and control-value on achievement emotions are covered. On that basis, opportunities are discussed how learning environments can be optimally designed that promote life-long learning and willingness to engage.

P 1.4 Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition

This seminar begins with an overview of how learning processes are modeled formally in the field of cognitive science. The course then gives a high-level introduction to how machine-learning algorithms and tools learn to perform the various tasks to which they are assigned. In the final section of the course, the two approaches are compared, and their similarities and differences are highlighted. Whether either the formal models or the machine-learning tools are really what we consider to be genuine human intelligence is then discussed.

Learning outcomes

Students will gain a foundational theoretical understanding to teaching and learning and a practical understanding of the implications by reviewing and applying the theories.

P 1.1 Human Development

The seminar aims to offer an understanding of central theories on human development. By the end of the seminar, it is expected that the students will be able to compare theories, discuss their underlying assumptions and their implications for empirical research, and critically reflect upon them.

P 1.2 Cognition, Instruction, Learning, and Technology

Students gain an overview of different instructional methods, such as learning and teaching concepts

	using digital media. Students have an understanding of these methods and can apply their design and analysis of technology in the context of enhanced learning environments. They, thereby, are able to reflect critically upon the use of digital technology in learning and teaching. P 1.3 Motivation and Emotion in Education The students acquire knowledge of factors affecting motivation and emotion in achievement situations and beyond. They are able to how to derive practical implications based on empirical findings and historical and current theoretical approaches to motivation. P 1.4 Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition The students gain knowledge about basic theories and computational models of learning in cognitive science, as well as an overview of how machine learning works at a fundamental level. Students will develop the competence for critical reflection about whether such approaches give an accurate characterization of human learning and intelligence.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	David Sachs (Program Coordinator)
Language(s)	English
Additional information	

Module: P 2 Advanced Statistics and Research Methods

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	P 2.1 Advanced Statistics and Research Methods 1	WiSe	45 h (3 SWS)	135 h	(6)
Seminar	P 2.2 Advanced Statistics and Research Methods 2	SoSe	45 h (3 SWS)	135 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 6 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 1
Duration	The completion of the module takes 2 semesters.
Content	The module facilitates the development of solid knowledge and skills in planning studies, statistical analysis, and the interpretation of statistical results. The courses offered as part of the module cover statistical methods such as multiple linear regression models and their variants (ANCOVA, mediation, moderated regression), structural equation modeling, and machine learning. Based on current research, empirical data are evaluated using statistical methods implemented in the R programming language. The results are then interpreted for their practical relevance according to the theoretical background of the methods used.
Learning outcomes	Students will learn to plan empirical studies and interpret findings from data related to learning and teaching, using statistical procedures for both analysis and interpretation.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.

Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Moritz Heene
Language(s)	English
Additional information	

Module: P 3 Assessment and Diagnostic Methods

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	P 3.1 Assessment and Diagnostic Methods 1	WiSe	45 h (3 SWS)	135 h	(6)
Seminar	P 3.2 Assessment and Diagnostic Methods 2	SoSe	45 h (3 SWS)	135 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 6 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 1
Duration	The completion of the module takes 2 semesters.
Content	The module will provide solid knowledge and skills in planning and delivering diagnostic measures. The courses provide insight into specific aspects of psychometric tests and questionnaires, as well as psychometric methods. Psychometric tests and questionnaires in the areas of intelligence, attention, motivation, reading, writing, and arithmetic are presented and discussed. Further practical aspects of psychometrics, such as how to construct questionnaires and performance tests and how to empirically evaluate them, are also considered. Additionally, the possibilities and limitations of social science-based research are covered.
Learning outcomes	Students will acquire the ability to plan, conduct, and interpret findings from individual diagnostics using psychometric tools. In addition, students learn to develop and empirically validate diagnostic test procedures and develop

	expertise in critically reflecting upon various psychological research methods used.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Moritz Heene
Language(s)	English
Additional information	

Module: P 4 Academic and Professional Skill Building

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	P 4.1 Educational Leadership and Talent Development Skills	WiSe	30 h (2 SWS)	60 h	(3)
Seminar	P 4.2 Academic Skills	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 6 ECTS credits have to be acquired. Class attendance averages about 4 contact hours. Including time for self-study, 180 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 1
Duration	The completion of the module takes 1 semester.
Content	The module covers the topics of educational leadership and talent development. It also covers career prospects in the field of the Learning Sciences and offers hands-on general academic skill-building. P 4.1 Educational Leadership and Talent Development Skills This course offers theoretical input on the topics of educational leadership and talent development, supports students in identifying their own existing and pending skills, and provides them with career prospects in the field of the Learning Sciences. For this purpose, guest speakers holding educational leadership positions and other positions in viable areas of applied Learning Sciences will be invited to offer insight into their work life and to discuss universal competencies relevant to their field. P 4.2 Academic Skills This course offers hands-on general academic skills such as scientific writing, precise scientific referencing and formatting, scientific poster presentations, and open and transparent science practices.

Learning outcomes	Students acquire relevant competencies, for instance, on self-, time- and project management, and are given the opportunity to build a network within various professional fields in the Learning Sciences. They also expand their academic skills regarding scientific writing and presenting, as well as practicing open and transparent research.
Type of examination	Exercise folder or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	
Language(s)	English
Additional information	

Module: WP 1 Teaching Science Perspectives I

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 1.1 Teaching Biology	SoSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	WahlMandatory module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences Teaching: „free domain"
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 2
Duration	The completion of the module takes 1 semester.
Content	The module covers the question of how learning processes differ depending on the content to be learned. Theoretical models of subject-specific teaching/learning research and their implementation in practice, such as methods for the analysis of domain-specific learning processes, are considered. Students shall approach the question from an empirical perspective, covering empirical findings in the field of subject-specific teaching and implementing them in practice in the context of secondary and tertiary education.
Learning outcomes	Students will learn about basic models of subject-specific teaching-learning research and their implementation in practice and methods learned for the investigation of subject-specific learning. In addition, they will be able to work across disciplines. They may implement current theories of biology education and/or perform their own

	investigation in the field of empirical subject-specific education.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Birgit Neuhaus
Language(s)	English
Additional information	

Module: WP 2 Teaching Science Perspectives II

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 2.1 Teaching Medicine	SoSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	WahlMandatory module with mandatory courses
Usability of the module in other programs	
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 2
Duration	The completion of the module takes 1 semester.
Content	The module addresses the question of how different learning processes depend on the content of specific learning domains. Students will cover the theoretical models of the subject-specific teaching-learning research and their implementation in practice, as well as methods for the analysis of domain-specific learning processes. The seminars raise the question of how empirical knowledge in the field of didactics can be acquired and implemented in practice in the context of secondary and tertiary education.
Learning outcomes	Students will learn about the grounding models of subject-specific teaching-learning research, their implementation in practice, and methods learned for the investigation of specialized learning. In addition, they will be expected to demonstrate an ability to work in an interdisciplinary environment. They will thereby acquire the ability to implement theories of didactics and will be expected to conduct their own investigation in the field of empirical subject-specific didactics.

Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Martin Fischer
Language(s)	English
Additional information	

Module: WP 3 Educational Systems Perspectives I

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	WP 3.1 Educational Systems and Achievement	SoSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 2
Duration	The completion of the module takes 1 semester.
Content	In module WP3, students are presented with the basic structure of education systems and knowledge of indicators used for assessing the quality and effectiveness of education systems. Different national educational systems are discussed with respect to their historical and cultural roots. In addition, theoretical conceptualizations of educational systems' aims and tasks are discussed, as well as the possibilities and limitations of large-scale assessments to evaluate the quality of educational systems.
Learning outcomes	Students are able to evaluate education systems from an educational and sociological perspective. They gain an overview of the various educational systems, their output, and influencing factors (national policy, founding strategies, etc.). Students will be able to recognize indicators of reliable sources so that they can interpret the relationship between the measurement result and the output of

	education systems. They are able to recognize the cultural and historical context of education systems and to question the possibility of transfer. In addition, they can critically reflect and apply theories and models related to educational systems.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Bernhard Schmidt-Hertha
Language(s)	English
Additional information	

Module: WP 4 Educational Counselling and Special Education Perspectives I

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	WP 4.1 Developmental Counselling	SoSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 2
Duration	The completion of the module takes 1 semester.
Content	This course offers an introduction to central frameworks and theories of developmental counseling, educational counseling, and early intervention, as well as their relations to clinical developmental psychology. It highlights their anthropological assumptions and assumptions about change processes. Selected support approaches will be presented, and their empirical evidence base will be discussed.
Learning outcomes	Students are able to compare frameworks and theories on developmental counseling, educational counseling, and/or early intervention. They are able to critically discuss support approaches based on their theoretical assumptions and/or empirical evidence.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory

	and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Markus Paulus
Language(s)	English
Additional information	

Module: WP 5 Empirical Project in Human Development

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 5.1 Empirical Project in Human Development 1	SoSe	60 h (4 SWS)	120 h	(6)
Lessons in small groups	WP 5.2 Empirical Project in Human Development 2	WiSe	60 h (4 SWS)	120 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 8 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	The module can be selected in compliance with the following rules: With regard to the compulsory elective modules WP - WP 8, two compulsory elective modules must be chosen.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 2 semesters.
Content	In this module, an intensive examination of current research findings and methods is carried out in one research area on human development. The students work on developing knowledge in the field of developmental psychology and work on selected topics based on current research. Students will learn about the development and implementation of scientific issues in the field of developmental psychology. After an introduction to theoretical and methodological grounding documents that constitute the basis for a current research area, one's own project is planned, conducted, analyzed, and documented.

Learning outcomes	Students have the ability to actively examine current theories, research methods, and application aspects in the area chosen. Students will become familiar with empirical studies, and the current research situation and will gain an insight into the methods used and the most influential studies in this research area on human development. In addition, learners will gain some expertise in the planning and execution of scientific studies. They are thereby encouraged to develop presentation skills as well as learn how to critically analyze and reflect upon empirical research.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Markus Paulus
Language(s)	English
Additional information	

Module: WP 6 Empirical Project in Cognition, Instruction, Learning, and Technology

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 6.1 Empirical Project in Cognition, Instruction, Learning, and Technology 1	SoSe	60 h (4 SWS)	120 h	(6)
Lessons in small groups	WP 6.2 Empirical Project in Cognition, Instruction, Learning, and Technology 2	WiSe	60 h (4 SWS)	120 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 8 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	Doctoral Training Program in the Learning Sciences PhD in the Learning Sciences
Elective guidelines	The module can be selected in compliance with the following rules: With regard to the compulsory elective modules WP - WP 8, two compulsory elective modules must be chosen.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 2 semesters.
Content	In this module, the focus is on the use of digital technologies to promote learning, training, and instructional processes and on the adoption of digital technologies for learning and teaching processes. The module has three priorities. The first is discussing specific aspects of learning, training, and instruction with digital technologies. Furthermore, techniques for evaluation and empirical review of the effectiveness of technology-supported learning will be presented, applied, and discussed.

	Techniques such as, for example, knowledge tests, measurement of skills and competencies, thinking out loud, and dialogue analysis will be covered. In addition, current research in the field of learning, training, and instruction is presented and discussed with digital technologies in various domains and contexts. After an introduction to theoretical and methodological grounding documents for the basis of current research findings, a student's own empirical study is to be planned, conducted, analyzed, and documented.
Learning outcomes	The students will gain knowledge about theories on the use of digital technologies in learning and teaching processes. In addition, they will acquire the ability to evaluate training and instructional activities and evaluate their relation to current research. They will be able to critically reflect upon the methodological and theoretical aspects of recent research findings. Students will analyze, develop, and evaluate learning and training environments. Furthermore, they will learn about adequate procedures for the evaluation and testing of learning processes and outcomes in technology-enhanced learning, training, and instruction environments and be able to select, adapt, develop, and apply them in order to answer specific research and evaluation questions. In addition, students will develop the necessary skills for the planning and execution of scientific studies.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Frank Fischer
Language(s)	English

Additional information

Module: WP 7 Empirical Project in Motivation and Emotion

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 7.1 Empirical Project in Motivation and Emotion 1	SoSe	60 h (4 SWS)	120 h	(6)
Lessons in small groups	WP 7.2 Empirical Project in Motivation and Emotion 2	WiSe	60 h (4 SWS)	120 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 8 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	
Elective guidelines	The module can be selected in compliance with the following rules: With regard to the compulsory elective modules WP - WP 8, two compulsory elective modules must be chosen.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 2 semesters.
Content	The module provides in-depth knowledge of theories and research findings for predicting academic and non-academic performance, which are primarily attributable to the field of educational psychology. Students will study current publications and research-selected questions related to the theme of excellence. After an introduction to theoretical and methodological grounding documents for the basis of current research findings, a student's own empirical study will be planned, conducted, analyzed, and documented.
Learning outcomes	Students should know the current state of research to identify highly gifted learners and other learners and have an overview of programs that support the learning of particularly gifted learners and students with learning difficulties or special educational needs. They should have practical insight as to how programs are

	developed and carried out and how such potential can be optimally exploited. They also are expected to gain knowledge of historical and current approaches in the field of excellence research. Moreover, they will have acquired skills in the planning and execution of scientific studies. Other skills in presenting, analyzing, and discussing research findings are also expected to be enhanced.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Anne Frenzel
Language(s)	English
Additional information	

Module: WP 8 Empirical Project in Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 8.1 Empirical Project in Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition 1	SoSe	60 h (4 SWS)	120 h	(6)
Lessons in small groups	WP 8.2 Empirical Project in Machine Learning, Artificial Intelligence, and Computational Modeling of Cognition 2	WiSe	60 h (4 SWS)	120 h	(6)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 8 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	
Elective guidelines	The module can be selected in compliance with the following rules: With regard to the compulsory elective modules WP - WP 8, two compulsory elective modules must be chosen.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 2 semesters.
Content	In this module, the students will carry out all the steps involved in an empirical project in cognitive science, with a specific focus on machine-learning methods and/or computational modeling. The steps involved are a review of existing literature, the development of a novel research question based on the literature, and the choice of an appropriate methodological focus (i.e., formal modeling or machine-learning-based analyses). Once a research question is determined, then a study will be planned and conducted (or existing data sets, if sufficient, collected). The technical skills necessary for data analysis will be learned through a combination of

	classes and learning from the appropriate literature, and the data will be analyzed. The results of the study with regard to the research question will then be reported.
Learning outcomes	Students have the ability to actively examine current theories, research methods, and application aspects in a research area relevant to learning in cognitive science. Students will become familiar with explicit empirical studies, and the current research situation and will gain an insight into the methods used and the most influential studies in this field of psychology. They will learn some hands-on skills in applying either machine learning or computational modelling methods. In addition, learners will gain some expertise in the planning and execution of scientific studies. They are thereby encouraged to develop presentation skills as well as learn how to critically analyze and reflect upon empirical research.
Type of examination	Written exam or term paper
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Christopher Donkin
Language(s)	English
Additional information	

Module: P 5 Internship Module

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Internship	P 5.1 Internship	WiSe und SoSe	-	360 h	(12)

For successful completion of the module, 12 ECTS credits have to be acquired. Class attendance averages about 0 contact hours. Including time for self-study, 360 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 1 semester.
Content	Students must complete an internship of a total of 360 hours (otherwise estimated as a total of 10 weeks) working on pedagogical and psychological issues or a research project in an institution, organization, or company. The module also includes the acquisition of soft skills, which are of particular relevance to the Learning Sciences.
Learning outcomes	As part of the internship, students are expected to gain practical hands-on experience and develop key skills in pedagogy- and/or psychology-related areas. They will thereby learn how to apply their theoretical knowledge to a practical field.
Type of examination	Internship report
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent

	mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	David Sachs (Program Coordinator)
Language(s)	English
Additional information	

Module: WP 9 Teaching Science Perspectives III

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 9.1 Teaching Mathematics	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 1 semester.
Content	Based on research literature, subject-specific models of instruction, assessment, or student cognition from mathematics education will be discussed and related to accompanying models from general educational research. The models will be applied to analyze, generate, and provide feedback on self- or other-generated representations of mathematics education practice.
Learning outcomes	Students know subject-specific models of instruction, assessment, or student cognition from mathematics education, as well as related research methods and results. They can use these models to analyze practice representations and to evaluate, optimize, or propose solutions for problems from teaching practices.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory

	and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Stefan Ufer
Language(s)	English
Additional information	

Module: WP 10 Teaching Science Perspectives IV

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Lessons in small groups	WP 10.1 Teaching Physics	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 1 semester.
Content	The module introduces fundamental and current topics of Physics Education. The students will gain knowledge of the primary challenges in learning and teaching Physics. They will explore educational approaches grounded in fundamental findings from empirical research alongside learning theories that guide Physics Education. These include current approaches to multimedia learning, theories for optimizing cognitive load, established conceptual learning frameworks, and research supporting accessible, individualized, and inclusive learning in Physics. Students will discover beneficial educational technologies illustrated through use cases involving extended reality, artificial intelligence, and game-based learning. Additionally, the use of physiological measures, such as eye tracking, to make learning more adaptive might be briefly discussed.
Learning outcomes	The module addresses different approaches, such as theoretical models from Physics Education Research and their implementation in current research. In order to introduce core aspects of Physics Education, learning theories and teaching approaches, as well as current research results are presented. Additionally,

	the beneficial use of technologies is discussed using selected examples. The module aims to give students an insight into the exciting research in physics education, laying the foundation for their own research activities in this or related fields.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Jochen Kuhn
Language(s)	English
Additional information	

Module: WP 11 Educational Systems Perspectives II

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	WP 11.1 Educational Sociology	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 1 semester.
Content	In module WP11, students are presented with the social structure and its reproduction in the educational system. Therefore, sociological theories on societal inequality and its causes will be discussed. The benefits of education and learning are discussed, as well as the contribution of education to individual and collective capital. Different disadvantaged groups and their situation in education are reflected, and strategies, concepts, and interventions to reduce inequity in education are evaluated.
Learning outcomes	Students are able to identify and critique the dynamics and structures of inequality in the educational system. They can evaluate educational settings in programs with respect to their contribution to equality and the empowerment of disadvantaged groups.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.

Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Dr. Bernhard Schmidt-Hertha
Language(s)	English
Additional information	

Module: WP 12 Educational Counselling and Special Education Perspectives II

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Seminar	WP 12.1 Counselling in Special Education Contexts	WiSe	30 h (2 SWS)	60 h	(3)

For successful completion of the module, 3 ECTS credits have to be acquired. Class attendance averages about 2 contact hours. Including time for self-study, 90 hours have to be invested.

Module type	Compulsory elective module with mandatory courses
Usability of the module in other programs	
Elective guidelines	The module can be selected in compliance with the following rules: See Annex I.
Entry requirements	None
Semester	Recommended semester: 3
Duration	The completion of the module takes 1 semester.
Content	This module examines learning disabilities, intellectual disabilities, and deafness from a psycho-pedagogical perspective.
Learning outcomes	Students are able to recognize various disabilities and identify appropriate programs and interventions for inclusive education for children with disabilities.
Type of examination	Written exam or term paper or presentation or portfolio
Type of assessment	The successful completion of the module will not be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	Prof. Fr. Peter Zentel
Language(s)	English
Additional information	

Module: P 6 Final Module

Program	Master's Program: Psychology: Learning Sciences and Human Development (Master of Science, M.Sc.)

Related module parts

Course type	Course (mandatory)	Rotation	Contact hours	Self-study hours	ECTS
Unterricht in Kleingruppen	P 6.1 Empirical Research Designs	SoSe	30 h (2 SWS)	60 h	(3)
Kolloquium	P 6.2 Colloquium Master's Thesis	SoSe	30 h (2 SWS)	60 h	(3)
Masterarbeit	P 6.3 Master's Thesis	SoSe	-	720 h	(24)

For successful completion of the module, 30 ECTS credits have to be acquired. Class attendance averages about 4 contact hours. Including time for self-study, 900 hours have to be invested.

Module type	Mandatory module with mandatory courses
Usability of the module in other programs	None
Elective guidelines	None
Entry requirements	None
Semester	Recommended semester: 4
Duration	The completion of the module takes 1 semester.
Content	The Master's thesis must be completed as an independent scientific piece of work. The work represents the latest scientific knowledge of a selected issue of educational psychology in the teaching-learning research domain, as well as a student's own empirical study on a self-developed research question. Students will be expected to present and discuss the intermediate steps in a colloquium. They will also be expected to plan their empirical research design in detail and will receive the support of their supervisor in composing a thesis of a high standard. Problems with the implementation of the work may, for this purpose, be expressed and addressed to the supervisor.
Learning outcomes	The students will be able to identify issues and other phenomena, apply theories, and derive appropriate research designs for teaching and learning. They are expected to independently develop a project with their own research question, taking into account

	the present literature and putting together a critical written report to address their research question. They will be expected to demonstrate the ability to deal appropriately with methodological, structural, and stylistic problems they may have faced in the completion of their master thesis. Students will thereby acquire the ability to plan and structure their work and will further develop their critical thinking skills.
Type of examination	Master's thesis
Type of assessment	The successful completion of the module will be graded.
Requirements for the gain of ECTS credits	ECTS credits will be granted when the module examination (or the examination of pertinent mandatory and potential compulsory elective module parts) has/have been completed successfully.
Responsible contact	David Sachs (Program Coordinator)
Language(s)	English
Additional information	

Annex I: Elective guidelines with regard to the compulsory elective modules WP 1 - WP 4 and WP 9 - WP 12

From the three elective subject areas, "Teaching Science Perspectives," "Educational Systems Perspectives," and "Educational Counselling and Special Education Perspectives," two elective subject areas must be chosen.

For this purpose

1. when taking the elective subject area “Teaching Science Perspectives,” students must take WP 1 or WP 2 together with WP 9 or WP 10.
2. when taking the elective subject area “Educational Systems Perspectives,” students must take WP 3 and WP 11.
3. when taking the elective subject area “Educational Counselling and Special Education Perspectives,” students must take WP 4 and WP 12.