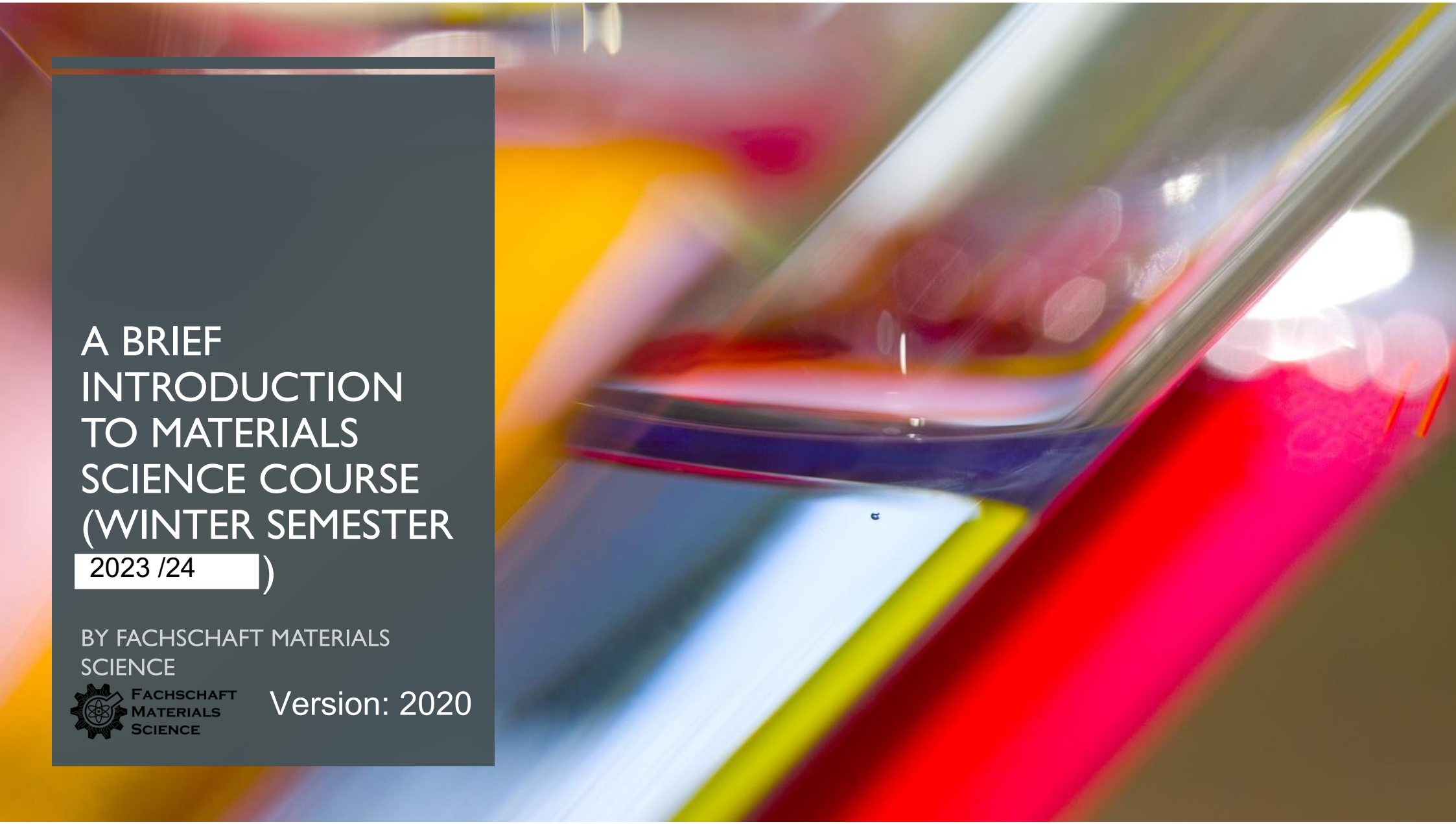


A BRIEF INTRODUCTION TO MATERIALS SCIENCE COURSE (WINTER SEMESTER 2023 /24)

BY FACHSCHAFT MATERIALS SCIENCE

FACHSCHAFT MATERIALS SCIENCE

Version: 2020

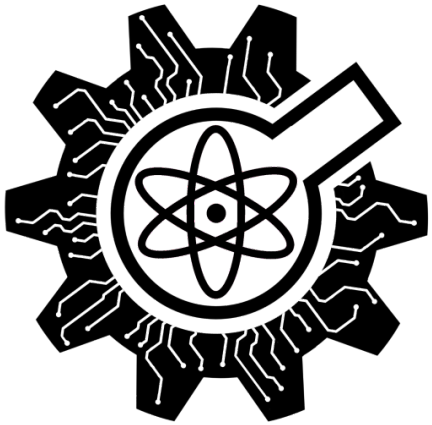
FACHSCHAFT
MATERIALS
SCIENCE

THE STUDENT COUNCIL MATERIALS SCIENCE (FS MAT. SCI.) IS A SUB-SUBJECT OF THE STUDENT COUNCIL OF THE FACULTY OF NATURAL SCIENCES (FS NW).
[REF. SATZUNG DES FACHSCHAFTSRATS DER FACHSCHAFT MATERIALS SCIENCE]

WE ARE HERE TO HELP YOU WITH STUDY OR EXAM RELATED ISSUES.

REACH US AT

https://groups.uni-paderborn.de/fs-materialsscience/



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THE MAIN TASKS UNDERTAKEN

Issues related to lectures, course modules, lab reports, PAUL

To provide Exam protocols to students

Organize activities like O-week, Election, Counselling, Parties, etc.

EXAMINATION REGULATIONS COURSE ORGANIZATION

Total Credit Points=120 CP

- **51 CP** =Compulsory modules
- **34 CP**=Elective modules
- **5 CP**=General studies
- **24 CP**=Master's Thesis
- **6 CP**= Oral defense

The modules are compulsory or elective modules. **The elective modules** are organized in four thematic areas:

- **I) Materials analysis**
- **II) Materials chemistry and processing**
- **III) Functional materials**
- **IV) Computer-aided materials sciences.**
- At least one module must be taken from three of these four areas. In total, two modules worth 5 CP and four modules worth 6 CP must be taken from the elective area. Beyond that, the student is responsible for choosing her or his specialization.

COMPULSORY MODULES

REF. EXAMINATION REGULATIONS
PAGE 20

Mandatory courses

Sem.	Course	Module	L	E/S	P	CP/WL
1	Fundamental Concepts of Materials Science	1	3	1		6/180
	Atomistic Materials Modeling	2	2	2		6/180
	Physics and Technology of Nanomaterials	3	2	1		5/150
	Characterization Techniques of Solids	4	2	1		5/150
	Macromolecular Chemistry / Structure-Property-Relations	5a	2			3/90
			11	**5**		**25**
2	Natural and Synthetic Functional Materials	5b	2			3/90
	Lab Course: Materials Physics and Analysis	6			3	5/150
	Fundamentals and Applications of Surface and Interface Spectroscopy	7	2	1		5/150
			4	**1**	**3**	**13**
3	Lab Course: Materials Chemistry and Analysis	8			3	5/90
	Current Topics in Materials Science	9a		2		3/90
	Project Based Course	9b			5	5/150
	General Studies	10	2	2		5/150
			2	**4**	**8**	**18**
4	Master Thesis	11a	20			24/720
	Concluding Colloquium	11b		2		6/180
			20	**2**		**30**
		S:	**37**	**12**	**11**	**86**

ELECTIVE MODULES

REF. EXAMINATION REGULATIONS
PAGE 21

Elective courses

Sem.	Course	Module	L	E/S	P	CP/WL
1	Structure and Dynamics at Materials Interfaces and Nanostructures	12	2	1		5/150
	Polymer Analysis	13	2	1		5/150
	Quantum Chemistry	14	2	1		5/150
	Biopolymers and Biointerfaces	15a	2			3/90
	Bioinspired Materials	15b	2	1		3/90
			10	**4**		**21**
2	Computational Spectroscopy	16	2	2		6/180
	Semiconductor Epitaxy	17	2	2		6/180
	Processing of Semiconductors	18	2	2		6/180
	Inorganic Materials Chemistry	19	2	1		6/180
	Simulation of Materials	20	2	1		6/180
	NMR in Materials Science	21a	2			3/90
	Synchrotron Techniques for Materials Science	21b	2			3/90
	Special Polymer Synthesis	22a	2			3/90
			16	**8**		**39**
3	Liquid Crystals	22b	2			3/90
	Micro Electromechanical Systems	23	2	2		6/180
	Molecular thermodynamics	24	2	1		5/150
	Microscopy and Spectroscopy with Electrons	25	2	2		6/180
	Particle Synthesis	26	2	1		5/150
	Ion Beam Analysis	27	1	1	2	6/180
			11	**7**	**2**	**31**
		S:	**37**	**19**	**2**	**91**

TOPICAL OVERVIEW OF ELECTIVE COURSE-AREAS

REF. EXAMINATION REGULATIONS PAGE 22

Topical overview of elective course-areas

I Materials Analysis
- Interface Electrochemistry (M12)
- Polymer Analysis (M13)
- Advanced Materials Analysis (M21)
- Advanced Electron Microscopy (M25)
- Ion Beam Analysis of Materials (M27)

II Materials Processing
- Semiconductor Epitaxy (M17)
- Semiconductor Processing (M18)
- Solid-State Materials Chemistry (M19)
- Particle Synthesis (M26)

III Adv. Functional Materials
- Biomaterials (M15)
- Soft Matter (M22)
- Micro Electromechanical Systems (M23)

IV Computational Materials Science
- Quantum Chemistry (M14)
- Computational Spectroscopy (M16)
- Finite Elemente Modeling (M20)
- Molecular Thermodynamics (M24)

SAMPLE COURSE PLAN

SEM	COURSE	MODULE	L	E/S	P	CP/WL
1.	Fundamental Concepts of Materials Science	1	3	1		6/180
	Atomistic Materials Modeling	2	2	2		6/180
	Physics and Technology of Nanomaterials	3	2	1		5/150
	Characterization Techniques of Solids	4	2	1		5/90
	Macromolecular Chemistry / Structure-Property-Relations 5	5a	2			3/90
	Quantum Chemistry	14	2	1		5/150
	Polymer Analysis	13	2	1		5/150
2.	Natural and Synthetic Functional Materials	5b	2			3/90
	Lab Course: Materials Physics and Analysis	6			3	5/150
	Fundamentals and Applications of Surface and Interface Spectroscopy	7	2	1		5/150
	Inorganic Materials Chemistry	19	2	1		6/180
	NMR in Materials Science	21a	2			3/90
	Synchrotron Techniques for Materials Science	21b	2			3/90

SEM	COURSE	MODULE	L	E/S	P	CP/WL
3.	Lab Course: Materials Chemistry and Analysis	8			3	5/90
	Current Topics in Materials Science	9a		2		3/90
	Project Based Course	9b			5	5/150
	General Studies	10	2	2		5/150
	Microscopy and Spectroscopy with Electrons	25	2	2		6/180
	Ion Beam Analysis	27	1	1	2	6/180
4.	Master Thesis	11a	20			24/720
	Concluding Colloquium	11b		2		6/180

FORM OF ASSESSMENT

- Written Exam
- Oral Exam
- Written project report with final presentation
- Assessment of practical
- Presentation

GRADING OF ASSESSMENT IN MODULES

1 = very good: an outstanding performance

2 = good: a performance significantly above the average requirements

3 = satisfactory: a performance that meets the average requirements

4 = adequate a performance which, despite its defects, still satisfies the requirements

5 = unsatisfactory: a performance which no longer satisfies the requirements because of serious defects.

Note: A module is completed when all assessments have been completed, i.e. the final module examination or partial module examinations have been passed with a minimum grade of "adequate". The module grade corresponds to the grade achieved in the module examination

RETAKING ASSESSMENTS

- A final module examination or partial module examination that has been passed can neither be retaken nor improved.
- A final module examination or partial module examination that has been failed can be retaken three times. If an examination is being retaken, the same course may be repeated or, if the course choice allows, a different course permitted for the relevant final module examination or partial module examination may be selected.
- If no further retakes are possible, the examination has been definitively failed.
- Examinations are usually held twice in the academic year. Retakes are usually offered at the latest eight weeks from the date of the first examination.
- If the master's thesis and the oral defence are "unsatisfactory", they may be repeated once and immediately. In the case of a retake of the master's thesis, a return of the topic within the period specified in Section 16 para. 3 is only permitted, however, if the option to return the topic was not exercised in the first attempt.

WITHDRAWAL, FAILURE TO APPEAR

01

Withdrawal of registration for examinations is possible on the Campus Management System of Paderborn University without specifying reasons up to a week before the respective examination date.

02

An assessment is deemed to be "unsatisfactory" (5.0) if the candidate fails to appear at an examination without good reason or leaves after the start of the examination without good reason or withdraws from the examination after the registration periods specified under para. 1 have elapsed without giving good reason.

03

The reasons asserted for the withdrawal must be made known to the Examinations Board immediately in writing to its satisfaction, and at the latest five working days from the respective examination date

ADMISSION TO MASTER'S THESIS

- Those who have successfully completed module examinations worth 90 CP shall be admitted to the master's thesis.
- It shall normally commence at the latest four weeks after all of the module examinations have been passed.

PAUL

Campus Management System of Paderborn University

https://paul.uni-paderborn.de

- Course registration
- Exam registration
- Lecture Schedule
- Messages
- Study material
- Contact persons:

  for exam related issues: **Karin Schäfer, room:C2.229**

  for problems with course registration: **Dr. Andreas Hoischen, room: NW1.884**

PANDA

https://panda.uni-paderborn.de/

- New learning platform of the university
- Lecture specific forums
- Study material
- Messages
- Some Lecturers use PANDA instead of PAUL to provide lecture materials and information

OLD EXAMS on our Website

https://groups.uni-paderborn.de/fs-materialsscience/

- Platform for collection of old exams and thought protocols
- How to get access to Materials Science group: FAQ on our homepage, question 1) (https://groups.uni-paderborn.de/fs-materialsscience/FAQ.html)
- Collecting exams/thought protocols is the responsibility of all students!
- Exams are seldom handed out, but asking the teacher after the exam is always worth it
- Idea for thought protocols: divide the tasks with your classmates

QUESTIONS

FACHSCHAFT MATERIALS SCIENCE