FP Tutoring



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FP = Advanced Lab Course ("Fortgeschrittenen-Praktikum")

- Prime purpose:
 Students learn to do experiments
- Side effect:

Deepened or new knowledge about physics subjects

- Important links
 - FP website: <u>https://www.physi.uni-heidelberg.de/Einrichtungen/FP/</u>
 - Infos for tutors (you find these slides there): <u>https://www.physi.uni-heidelberg.de/Einrichtungen/FP/info/betreuerhinweise.php</u>
 - Introductory slides for students: <u>https://www.physi.uni-heidelberg.de/Einrichtungen/FP/aktuelles/fp-intro.pdf</u>

FP team



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FP Basics



- Students need to do
 - 8 experiments
 - > 2 special write-ups (typically latex; experiments picked by students)
 - I FP seminar talk
- Corresponds to 11 ECTS points
- Typically done by the students in their 5th and 6th semester
- 1 experiment = 4 afternoons or 2 full days
 - Normal time slot: Monday to Thursday afternoon 14-18
 - Appointments can be arranged with students in a flexible way
- Teams of 2 students in the FP who perform the experiments together
 - Currently restricted face-to-face format (next slide)

FP in Corona mode



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- Some experiments currently in purely virtual form
 - F09/10, F44, F69, F91/92, F95, F96/97, S01/02/03/04
- Some experiments in restricted face-to-face form
 - Distance of 1.5 m kept at all times.
 - Only one student in the lab at a given time. The partner is connected through a video conferencing tool. Students take turns in the course of the experiment.
 - Corona gargle test available for students and tutors
 - Further measures:

FFP2 masks, room ventilation, disinfectants, reduced number of groups per appointment, documentation who is in the lab (contact tracing), ...

Concept approved by the Rektorat

FP1 and FP2



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FP1

- More basic experiments
- Takes place in lab building (INF 501)
- FP2
 - In different institutes (PI, KIP, IUP, MPIA, MPIK)
 - Normally 4 FP1 + 4 FP2 (or 3+5)
 - At the moment any FP1/FP2 combination accepted

FP Experiments



1	Electronics	1	E01/06 /07/08/09	Basic Electronics
2	Mechanics and Vacuum	1	F70/71/72	Mechanics and vacuum
3	Computer and Data Processing	1	F75/76 /77/78	Computer and data processing
4	Measurement Methods	1	F80/81	Scintillators
4	Measurement Methods	1	F82/83	Coincidence spectrometer
5	Optics 1	1	F85/86/F87	Basic Optics
6	Solid State Physics	2	F14	Debye temperature
6	Solid State Physics	2	F29	Atomic force microscope
6	Solid State Physics	2	F69	Laue X-ray diffraction

7	Spectroscopy	2	F43	Raman spectroscopy
7	Spectroscopy	2	F44	Zeeman spectroscopy
7	Spectroscopy	2	F47	Cyclotron frequency in a Penning trap
7	Spectroscopy	2	F61	NMR
7	Spectroscopy	2	F62	NMR experiment starts on Wednesdays
8	Nuclear and Particle Physics	2	F13	Muon lifetime experiment starts on Tuesdays
8	Nuclear and Particle Physics	2	F91/92	Studying the Z Boson with the ATLAS Detector at the LHC
8	Nuclear and Particle Physics	2	F96/97	Characterisation of Silicon Pixel Sensors for High-Energy Physics

FP Experiments

9	Environmental Physics	2	F18/38	Stratospheric trace gases
9	Environmental Physics	2	F50/51	Limnology
9	Environmental Physics	2	F55	Rayleigh fractionation
9	Environmental Physics	2	F56	Radioactive tracers in environmental research
9	Environmental Physics	2	F58	Cavity-Enhanced DOAS
9	Environmental Physics	2	F59	Active Solute Transport in Saturated Porous Media
10	Optics 2	2	F16	Laser spectroscopy
10	Optics 2	2	F20	Magneto-optical trap
10	Optics 2	2	F30	Stellar CCD photometry
10	Optics 2	2	F36	Wave front analysis
10	Optics 2	2	F90	Transmission electron microscopy (TEM)



11	Complex Systems	2	F09/10	Neuromorphic Computing
12	Medical physics	2	F95	Medical image analysis
13	Statistical methods	2	S01/02 /03/04	Statistical methods in experimental physics



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- Tutors can offer appointments through their FP web interface
 - Student see the offered appointments on their web interface
- Tutors can also book appointments directly with students
 - You find students in the FP system based on their names

 For the lecture period ("Vorlesungszeit") the standard slots are opened for booking automatically

Booking of FP experiments (2)



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1. Dates and booking

Grading of FP experiments	Dates and bookings »	Info »	Misc »	logoff	Help							
last lasin 2021 02 26 22:21:0	Overview											
Present time 2021-02-26 23:21:0	Bookings out of term	It automatically after 1000 s inactivity.										

2. Overview of dates

Woche	Мо	Di	Mi	Do	Fr
11	15.03.	16.03.	17.03.	<u>18.03.</u>	<u>19.03.</u>
	<u>S01</u>		F91		
	<u>S02</u>		F92		
	<u>S03</u>				
	<u>S04</u>				
12	22.03.	23.03.	24.03.	<u>25.03.</u>	26.03.
	F91		F91		
	F92		F92		
	<u>S01</u>				
	<u>S02</u>				
	<u>S03</u>				
	<u>S04</u>				

3. Options after selecting a date

am Mo 03.05.21

Neuen Versuchstermin anbieten:	F91	F92	S01	S02	S03	S04
Termin mit Praktikanten buchen:	F91	F92	S01	S02	S03	S04

Tutors organize who will supervise a given appointment



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- Usually more than one tutor per experiment
- It is up to the tutors to organize who is the tutor for a given date
- FP tutor web interface can be used to organize this
- Important: if no tutor is assigned to a given date this does not indicate to the students that a booked appointment does not take place

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Tasks of a FP tutor



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- Initial meeting with the students
 - Check that students are well prepared (can send students home if not ...)
 - Explain what needs to be done
- Help students perform the experiment
 - Be present when needed!
- Final colloquium with the students after the experiment
 - Ideally on last day of the experiment
 - Deadlines
 - 3 weeks after experiment (no special write-up)
 - 6 weeks in case of an experiment with special write-up
- Enter grades and final ok ("Testat") through web interface
- Further tasks
 - Help students prepare their FP seminar talks
 - Evaluate and give feedback on special write-up

Grading (1)



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Grading system

- -|0|+|++ like in the basic lab course
- Translation to German school grades:
 "+" = 1.0, "0" = 2.3, "-" = 4.0
- ++ : reserved for extremely outstanding performance (rare)

5 partial grades

- V: preparation ("Vorbereitung")
- D: practical execution ("Durchführung")
- P: protocol ("Protokoll")
- A: analysis and evaluation of the data ("Auswertung")
- K: critical assessment of the results ("kritische Würdigung")
- 10 partial grades for experiments with special write-up
 - grade for "A" duplicated five times

Grading (2)



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Fraction <i>p</i> of max. #points	final FP grade
90% < <i>p</i>	1
80% < <i>p</i> ≤ 90%	1.3
70%	1.7
60% < <i>p</i> ≤ 70%	2
50% < <i>p</i> ≤ 60%	2.3
40% < <i>p</i> ≤ 50%	2.7
30% < <i>p</i> ≤ 40%	3
20% < <i>p</i> ≤ 30%	3.3
10% < <i>p</i> ≤ 20%	3.7

Calculation of the grade:

- ++: 3 points
- +: 2 points
- 0: 1 points
- -: 0 points

$$p = \frac{\sum \text{ points}}{2 \times \# \text{ partial grades}}$$

Grading interface



Final ok <u>'testiert'</u> ("Testat") faulty, returned not executed					٦ ١	Tick this box once special write-up is okay					Er	Enter grades				
student		date of exp.	Quiz	due	returneo	status overdue vei v overdue	KL	Testat special writeup	tutor	v	D	grades P	A	к	judgement (optional) comment (optinal)
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	S01					testiert	I.			++	+	+	+	+		
	S02					testiert	L	•	Access 1999	++	+	+	+	+		
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Teaching credits



- Minimum requirement of the Department of Physics and Astronomy
 - 2 teaching units ("Deputate")
- Actual teaching requirements defined by the institutes
 - PI and KIP, e.g., require 3 teaching units
- One FP appointment corresponds to 1/6 teaching unit
 - Independent of the number of groups per appointment
 - 1/5 teaching unit per experiment for FP1 experiments at INF 501
- Extra teaching credits possible for work on experimental setup, instruction manual, etc.
- Teaching certificate
 - Please send email to Dr. Reinhold Baier (<u>reinhold.bayer@iup.uni-heidelberg.de</u>) when you are done with all FP experiments
 - He will send you the certificate

Getting started as a new tutor



- Register as a tutor
 - email to <u>fp@physi.uni-heidelberg.de</u>
 - Mr. Welzbacher will enter you into the FP system
 - Access to FP tutor web interface (based on Uni-ID)
- Talk to fellow tutors to learn details about your experiment
 - email addresses: <u>https://www.physi.uni-heidelberg.de/Einrichtungen/FP/kontakt/kontakt_sortiert_nach_versuch.php</u>
- Be a good teacher and have fun in the FP!