Elective Advanced Lectures: Experimental Physics - physics70a

Module No.	**physics70a**
Category	Elective
Credit Points (CP)	3-6
Semester	1.-2.

Module: Elective Advanced Lectures: Experimental Physics

Module Elements:

Nr	Course	Course No.	CP	Artkurz	Teaching hours	Semester
1	Particle Astrophysics and Cosmology (E)	physics711	6	Lect. + ex.	3+1	WT
2	Advanced Electronics and Signal Processing (E/A)	physics712	6	Lect. + ex.	3+1	ST
3	Particle Detectors and Instrumentation (E/A)	physics713	6	Lect. + lab.	3+1	ST
4	Advanced Accelerator Physics (E/A)	physics714	6	Lect. + ex.	3+1	ST/WT
5	Experiments on the Structure of Hadrons (E)	physics715	4	Lect. + ex.	2+1	WT
6	Statistical Methods of Data Analysis (E)	physics716	4	Lect. + ex.	2+1	ST
7	High Energy Physics Lab (E)	physics717	4	Laboratory		WT/ST
8	Low Temperature Physics (E/A)	physics731	6	Lect. + ex.	3+1	WT/ST
9	Optics Lab (E/A)	physics732	4	Laboratory		WT/ST
10	Holography (E/A)	physics734	3	Lecture	2	ST
11	Laser Cooling and Matter Waves (E)	physics735	3	Lecture	2	WT/ST
12	Crystal Optics (E/A)	physics736	6	Lect. + ex.	3+1	WT
13	Intensive Week: Advanced Topics in Photonics and Quantum Optics (E)	physics737	4	Lect. + lab. + sem.	3	WT/ST
14	Lecture on Advanced Topics in Quantum Optics (E)	physics738	4	Lect. + ex.	2+1	WT/ST
15	Lecture on Advanced Topics in Photonics (E/A)	physics739	4		2+1	WT/ST
16	Intensive Week: Advanced Topics in High Energy Physics (E)	physics719	4		3	WT/ST
17	Hands-on Seminar: Experimental Optics and Atomic Physics (E/A)	physics740	3		2	WT/ST
18	Physics with Antiprotons (E)	physics720	3	Lecture	2	WT
19	Intensive Week: Advanced Topics in Hadron Physics (E)	physics721	4		3	WT/ST
20	Modern Spectroscopy (E/A)	physics741	4		2+1	WT/ST
21	Internships in the Research Groups	physics799	4	internship		WT/ST
22	Ultracold Atomic Gases (E/T)	physics742	6	Lect. + ex.	3+1	WT

Nr	Course	Course No.	CP	Artkurz	Teaching hours	Semester
23	Advanced Gaseous Detectors - Theory and Practice (E)	physics722	6		3+1	ST
24	Programming in Physics and Astronomy with C++ or Python (E/A)	physics718	4	Lect. + ex.	2+1	ST
25	Hands-on Seminar: Detector Construction (E/A)	physics723	3		2	WT/ST
26	Selected courses from catalogue type "E" (Experimental) or "E/A" (E/Applied)	see catalogue	3-6	see catalogue		ST/WT
27	Also possible classes from M.Sc. in Astrophysics					

Requirements for Participation: none

Form of Examination: see with the course

Content: Advanced lectures in experimental physics

Aims/Skills: Preparation for Master's Thesis work; broadening of scientific knowledge

Course achievement/Criteria for awarding cp's: see with the course

Length of Module: 1 or 2 semester

Maximum Number of Participants: ca. 100

Registration Procedure: s. https://basis.uni-bonn.de u. http://bamawww.physik.uni-bonn.de

Note: Note: The student must achieve at least 18 CP out of all 4 Elective Advanced Modules