

Honours in Physics 2015

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A. General information

Dear Honours students in Physics at Stellenbosch, welcome to the course for 2015! We hope your year will be interesting and full of exciting new physics.

The following pages provide an outline for schedules during the year (with the precise time slots for the second semester being made known nearer to the time). You are always welcome to ask the course coordinator, Kristian Müller-Nedebock, if you have any questions or issues throughout the year.

Please take note of the following points:

- Honours projects comprise one quarter of your degree. Please chat with the coordinator for projects in your chosen specialisation within the first two weeks of the course for information. The environments run the project work with differences.
- The main tests for the honours course are scheduled to occur in lecture-free weeks. Due to the many constraints upon the course, these weeks will not be moved (e.g. the first test week will remain in its position before the mid-semester break).
- Honours students should attend, where possible, all colloquia, scheduled for Tuesdays at 12:00, and, if the schedule permits, are encouraged to attend the regular group talks of their specialisations.
- The Faculty of Science has an obligatory information session on 3 February 2015. Please see, p. 8.
- The Department of Physics has its own information session scheduled for 13:00 on 4 February. Here too your attendance is required, please.
- As you will see, we are commencing with some mathematical revision before entering the gritty parts of the modules.

B. Overview for the year

B.1 Weekly planning for 1st Semester 2015

Draft Honours Lecture schedule: Semester 1, 2015

Week commencing on	Honours topic	Week count	Schedule	Comments	Deadlines for students	Deadlines for lecturers
26 January 2015	Mathematical Methods, Introduction week	1	Schedule MM	Starts one week earlier than undergraduate lecture	All students in experimental specialisations must consult their group coordinators to discuss their honours project	
02 February 2015	Mathematical Methods and introduction (Mo-We), start of normal lectures (Th-Fr)	0.5	Schedule MM	Contains obligatory Faculty of Science introductory session for students		
09 February 2015	Term 1	1.5	Schedule L1			
16 February 2015	Term 1	2.5	Schedule L1			
23 February 2015	Term 1	3.5	Schedule L1			
02 March 2015	Term 1	4.5	Schedule L1			
09 March 2015	Term 1	5.5	Schedule L1			
16 March 2015	Term 1	6.5	Schedule L1			Question papers for moderation on 18 March
23 March 2015	Normal lectures (Mo-We); preparation days without lectures (Th-Fr)	7	Schedule L1 (until We)			
30 March 2015	<i>Honours Test Week</i>		T1	Public holiday on 3 April		Final submission of all project proposals to HoD
06 April 2015	<i>University break</i>					
13 April 2015	Term 2	1	Schedule L2		13 April: All students in the experimental specialisations must indicate their final choices for projects chosen	Finalisation of first-term marks by 17 April. Final marks P711 and P712 due.
20 April 2015	Term 2	2	Schedule L2			Honours marks discussion
27 April 2015	Term 2	3	Schedule L2	Public holidays on 27 April and 1 May; NB: Thursday 30 April the University follows the Friday timetable		
04 May 2015	Term 2	4	Schedule L2			
11 May 2015	Term 2	5	Schedule L2			
18 May 2015	Term 2	6	Schedule L2			Question papers for moderation on 20 May
25 May 2015	Term 2	7	Schedule L2			
01 June 2015	<i>Honours tests</i>		T2			
08 June 2015	<i>Honours tests</i>		T2			
15 June 2015				Public holiday on 16 June	15 June: Theoretical Physics students must indicate their final choices for projects chosen; First Theory project commences; deadline 1st preliminary project report (experimental)	Final module marks P721, P714, P713, P719; first half marks P772

B.2 Weekly planning for 2nd Semester 2015

Draft Honours Lecture schedule: Semester 2, 2015

Week commencing on	Honours topic	Week count	Schedule	Comments	Deadlines for students	Deadlines for lecturers
20 July 2015	Term 3	1	Schedule L3			
27 July 2015	Term 3	2	Schedule L3			
03 August 2015	Term 3	3	Schedule L3			
10 August 2015	Term 3	4	Schedule L3	Public holiday on 9 Aug., with Monday 10 August off; Tuesday, 11 Aug. it is a Monday time table.		
17 August 2015	Term 3	5	Schedule L3		21 August: Theory students deadline for first project final report. All experimental specialisation students must submit an interim project report.	
24 August 2015	Term 3	6	Schedule L3			
31 August 2015	Term 3	7	Schedule L3		4 September: Deadline 2nd preliminary project report (experimental)	Question papers for moderation on 2 September
07 September 2015	<i>University break</i>					
14 September 2015	<i>Honours Test Week</i>					
21 September 2015	Term 4	1	Schedule L4	Public holiday, Thursday 24 September; Wednesday 23 Sept. is a Thursday time table.		Finalisation of third-term marks by 25 Sep. Final marks P716, P747, P718, P748 due.
28 September 2015	Term 4	2	Schedule L4			Honours marks discussion
05 October 2015	Term 4	3	Schedule L4			
12 October 2015	Term 4	4	Schedule L4			
19 October 2015	Term 4	5	Schedule L4			Question papers for moderation on 21 October
26 October 2015	Term 4	6	Schedule L4		30 October: Deadline: all draft honours reports	
02 November 2015	<i>Honours tests</i>		Schedule L2			
09 November 2015	<i>Honours tests</i>		Schedule L2			
16 November 2015	<i>Project presentations</i>				Final project deadline 16 Nov.	Final project deadline 16 Nov.; All Final Marks by 18 November. Honours marks discussion.

Module code	Module Name	Lectured by	as per specialisation				Term in which offered			
			Nuclear Physics	Lasers	Radiation & Health	Theoretical	1st Term	2nd Term	3rd Term	4th Term
711 (8)	Electromagnetism	Prof. H. Touchette	X	X	X	X	8			
712 (8)	Lagrange and Hamilton Mechanics	Prof. B.I.S. van der Ventel	X	X	X	X	8			
713 (8)	Solid State Physics	Dr F. Cinti	X	X	X	X		8		
714 (16)	Quantum Mechanics B	Dr J.N. Kriel	X	X	X	X	8	8		
716 (8)	Atomic Physics	Dr H. Uys		X	X				8	
718 (8)	Radiation Interaction	Dr J.A. Stander			X				8	
719 (8)	Quantum Mechanics C	Prof. H.C. Eggers	X			X		8		
721 (16)	Statistical Physics B	K.K. Müller-Nedebeck	X			X	8	8		
741(32)	Physics Project	individual project supervisors; representative of specialisation	X	X	X	X	Throughout year, but depending on specialisation, please see your head of specialisation			
744 (8)	Laser Spectroscopy	Prof. H. Schwoerer		X						8
745 (16)	Quantum Optics and Laser Technology	Prof. E.G. Rohwer & Dr G.W. Bosman		X					8	8
747 (8)	Molecular Physics	Prof. H. Schwoerer		X		X (for theorists replaces P757)			8	
748 (8)	Nuclear Reactions and Nuclear Structure	Prof. P. Papka	X		X				8	
750 (8)	Physics of Radiation Dosimetry/Radiology				X				4	4
751 (8)	Physics of Nuclear Medicine				X				4	4
752 (8)	Fisika van Radioterapie (Tygerberg)				X				4	4
	Physics of Radiotherapy									
753 (8)	Stralingsbeskerming (Ithemba Labs)				X					8
	Radiation Protection									
754 (8)	Many-body Theory	Prof. M. Kastner	X			X				8
755 (16)	Relativistic Quantum Mechanics and Quantum Field Theory	Prof. H. Weigel	X			X			8	8
757 (8)	Entropy and Information		NOT OFFERED IN 2015							
758 (8)	Dynamic Systems and Complexity		NOT OFFERED IN 2015							
772 (16)	Optika / Optics	Dr H. Uys & Dr. G.W. Bosman		X				8		8

B.3 Modules offered in 2015 per specialisation

C. Detailed weekly lecture schedules

C.1 First two weeks (MM) [26 Jan. - 6 Feb. 2015]

	Monday, 26 Jan.	Tuesday, 27 Jan.	Wednesday, 28 Jan.	Thursday, 29 Jan.	Friday, 30 Jan.
08:00 - 08:30					
08:30 - 10:30	See Miss Christine Ruperti, then Welcoming in lecture Hall Epsilon at 10:00 , then introduction to our Departmental library	Mathematical Methods - KK Müller-Nedebock: revision of Dirac delta functions, etc.	Mathematical Methods - KK Müller-Nedebock: revision of series expansion, etc.	Mathematical Methods - JN Kriel: Vector spaces, matrices and coordinate transformations, etc.	Mathematical Methods - JN Kriel: Vector spaces, matrices and coordinate transformations, etc.
10:30 - 11:00					
11:00 - 13:00	Mathematical Methods - KK Müller-Nedebock: revision of fundamental transformations	Mathematical Methods - KK Müller-Nedebock: Extrema	Mathematical Methods - KK Müller-Nedebock: revision of integration in complex plane	Mathematical Methods - JN Kriel: Vector spaces, matrices and coordinate transformations, etc.	Mathematical Methods - JN Kriel: Vector spaces, matrices and coordinate transformations, etc.
13:00 - 14:00					
14:00 - 17:00	Mathematical Methods Exercises	Mathematical Methods Exercises	Mathematical Methods Exercises	Mathematical Methods Exercises	Mathematical Methods Exercises

	Monday, 2 Feb.	Tuesday, 3 Feb.	Wednesday, 4 Feb.	Thursday, 5 Feb.; NORMAL LECTURES COMMENCE	Friday, 6 Feb.
08:00 - 08:30		Postgraduate orientation workshop presented by Faculty of Science. Obligatory for all Honours students. Please see separate programme.			Stat. Phys. B (P721) - ends at 10:00
08:30 - 10:30	Electrodyn. (P711) first lectures		Mathematical Methods - BIS van der Ventel: Mathematical methods relevant to Classical dynamics		
10:30 - 11:00					
11:00 - 13:00	Electrodyn. (P711) first lectures		Mathematical Methods - BIS van der Ventel: Mathematical methods relevant to Classical dynamics	Electromagn. (P711)	Classical Dyn. (P712)
13:00 - 14:00			Dept of Physics Information session for graduate students (venue TBC)		
14:00 - 17:00	Mathematical Methods Exercises		Mathematical Methods Exercises	Quantum M. B (P714) - tutorial	Electromagn. (P711) - tutorial

C.2 1st Term (L1) [9 Feb. - 25 Mar. 2015]

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00 - 08:30					Stat. Phys. B (P721) - ends at 10:00
08:30 - 10:30	Electromagn. (P711)	Quantum M. B (P714)	Classical Dyn. (P712)		
10:30 - 11:00					
11:00 - 13:00	Stat. Phys. B (P721)	Colloquia and group meetings	Quantum M. B (P714)	Electromagn. (P711)	Classical Dyn. (P712)
13:00 - 14:00					
14:00 - 17:00	Lab. Project	Classical Dyn. (P712) - tutorial	Stat. Phys. B (P721) - tutorial	Quantum M. B (P714) - tutorial	Electromagn. (P711) - tutorial

C.3 2nd Term (L2) [13 Apr. - 29 May 2015]

	Monday	Tuesday	Wednesday	Thursday	Friday	
08:00 - 08:30					Stat. Phys. B (P721) ends at 10:00	
08:30 - 10:30	Solid State Ph. (P713)	Quantum M. B (P714)	Optics (P772)	Quantum M. C (P719)		
10:30 - 11:00						
11:00 - 13:00	Stat. Phys. B (P721)	Optics (P772)	Colloquia and group meetings	Quantum M. B (P714)	Solid State Ph. (P713)	Quantum M. C (P719)
13:00 - 14:00						
14:00 - 17:00	Quantum M. C (P719) - tutorial	Lab. Project	Stat. Phys. B (P721) - tutorial	Optics (P772) - tutorial	Quantum M. B (P714) - tutorial	Solid State Ph. (P713) - tutorial

C.4 3rd Term (L3) [to be confirmed]

C.5.4th Term (L4) [to be confirmed]

D. Test schedules

D.1 Test week starting 30 March

Test time table: middle first semester				
T1	Mon., 30 Mar.	Tue., 31 Mar.	Wed., 1 Apr.	Thu., 2 Apr.
10:00-13:00	P714	P712	P721 orals	P711
14:00-17:00			P721 orals	

D.2 Test weeks starting 1 June

Test time table: end first semester					
T2	Mon., 1 Jun.	Tue., 2 Jun.	Wed., 3 Jun.	Thu., 4 Jun.	Fri., 5 Jun.
10:00-13:00		P714			P721 orals & P772
14:00-17:00					P721 orals
	Mon., 8 Jun.	Tue., 9 Jun.	Wed., 10 Jun.	Thu., 11 Jun.	Fri., 12 Jun.
10:00-13:00		P719			P713
14:00-17:00					

D.3 Test week starting 14 September - to be confirmed

D.4 Test weeks starting 2 November - to be confirmed

**FACULTIES OF NATURAL SCIENCE AND AGRISCIENCE
2015
POSTGRADUATE STUDENT ORIENTATION**

The Faculties will be presenting a Post Graduate Orientation Workshop on **Tuesday 3 February 2015** in the **Con de Villiers Hall (A201), J.C. Smuts Building**. The first part of the workshop is **compulsory** for all **new Honours students and Masters students new to SU**.

A separate work shop, focusing more on Masters and Doctoral studies, writing up research and the publication of research, will be offered later in the year for Masters and PhD students.

Topic	Time	Speaker	Department/Company
Arrival and Registration	09:45-10:00	<i>All sessions until 14:00 are compulsory for ALL students</i>	
Welcome and introduction	10:00-10:05		
Students rights and responsibilities	10:05-10:20	Mrs Mariëtta van den Worm	Faculty Manager: Science
PG Student support	10:20-10:50	Ms Ronel Steyn	Postgraduate and International Office
Ethics , Etiquette and Plagiarism in Research	10:55-11:25	Dr Lyn Horn or associate	Research Office
Data Safety and Security and Documentation Backup	11:30-11:45	Ms Ilse De Kock	NARGA
Library Research Support services	11:45 – 12:15	Ms Marie Theron and Mr Y Ras	SU Library Services
Presenting research results	12:20- 13:00	Prof Karen Jacobs	Microbiology
Lunch	13:00-14:00	A luncheon package will be provided.	
Safety at the workplace ; Introduction to Occupational Health and Safety Act Fire and evacuation procedures	14:00 – 14:20	Mrs Mariëtta van den Worm	Faculty Manager: Science
Safety outside the laboratory	14:25 - 15:00	Dr James Pryke	Conservation Ecology and Entomology
Special modules for all students in Biological or Chemical disciplines working in wet labs			
Introduction on How to Handle Chemical Laboratory Waste (all types) and Hazardous spills	15:05-15:45	Ms Peta Steyn	Chemistry and Polymer Sciences
Introduction on How to Handle Biological Laboratory Waste	15:50- 16:20	Mr Ashwin Isaacs	Physiological Sciences