

General Course Information

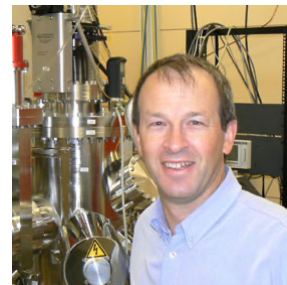
PHYS310 and PHYS440 - 2022 Thermal, Statistical and Particle Physics

0.125 EFTS 15 Points
First Semester

Course Coordinator

Prof. Roger Reeves (Thermal and Statistical Physics)
Room 421 BT Building Ph 369 5943
roger.reeves@canterbury.ac.nz

Dr Chris Gordon (Particle Physics)
Room 413 BT Building Ph 369-5156
chris.gordon@canterbury.ac.nz



Description

This course provides an introduction to the study of the physical properties of matter. It integrates the study of thermal properties of matter in bulk (thermodynamics) with the molecular/atomic approach (statistical physics). The particle physics is further extended to subatomic scales with an introduction to the phenomenology of nuclear structure, radiation processes and the standard model of particle interactions.

Assessment

- There is **NO FINAL EXAM** for PHYS310/440

The **THREE** sections of PHYS310/440 will be assessed independently in the form of 50-60 minute tests and homework with equal proportion between sections.

25% HW Assignments.
75% Three independent tests
 1. Thermodynamics Test: **Week 6**
 2. Statistical Mechanics Test: **Week 10**
 3. Nuclear and Particle Physics Test, TBA

❖ PHYS440 students will have extra assessment questions.

If you are **absent** from the test or exam, or if you consider that your performance in the test or exam was impaired, then you can apply for **Special Consideration**. Action **MUST** be taken within 5 days of the assessment.

The link with details can be found at
<http://www.canterbury.ac.nz/exams/special-consideration.shtml>

Textbook

Your textbook from PHYS200, Serway, R A; Moses, C J; Moyer, C A. Modern physics. 3rd ed. will be a very good reference for many of the topics in PHYS310. However, you should not limit yourself to the discussion from just one author. Some other books that may be useful are:

Thermal and Statistical Mechanics

Thermal Physics (1980)	Kittel
Thermal Physics (1991)	Sprackling
Thermal physics: an introduction to thermodynamics, statistical mechanics, and kinetic theory (1988)	Riedi, P. C
Thermodynamics: principles and applications (1971)	Andrews, Frank C
Introductory Statistical Mechanics (1996)	Bowley and Sanchez
An Introduction to Statistical Thermodynamics (1995)	Gasser
Thermodynamics and Statistical Mechanics	Greiner et al
Thermodynamics, kinetic theory, and statistical thermodynamics: (1975).	Sears and Salinger.

Particle Physics

Nuclear and Particle Physics (1991)	Williams
Particle physics 1997.	Martin and Shaw
Nuclear and particle physics (1975)	Frauenfelder, Hans,
Nuclear and particle physics source book (1988).	Parker
Nuclear and radiochemistry : fundamentals and applications (1997)	Karl Heinrich Lieser.

Notes

Some course material will be available on the Learn system: <http://learn.canterbury.ac.nz/>

Class Representative

- ❖ As part of the feedback system on the course a Class Representative will be appointed. This person (or persons) will be a volunteer selected during the first few lectures.
- ❖ The Class Rep acts as an intermediary between the class as a whole and our department so that any problems of an organizational type, level of difficulty, etc. nature can be brought to our attention.
- ❖ The Class Rep(s) will be members of the Departments Staff-Student Liaison Committee. This committee meets twice during the semester (refreshments supplied) where the reps report on their class and have an opportunity meet other reps and lecturers.

Contact Details

- ❖ If you have a problem with any part of the course there are several people who are available for advice.
 - If the problem is with your understanding of the lecture or homework material then you should approach the Lecturer.
 - The Class Representative who acts as a feedback channel from the class to the Department.
 - If you have a grievance with some aspect of the course then in the first instance you should discuss the problem with the Lecturer. Failing a satisfactory resolution at this stage your next academic contacts are:
 - 300 level supervisor, Prof. David Wiltshire
 - Head of the School, Prof. Rudi Marquez

Further steps involve the University grievance procedures. The UCSA is able to help here

GENERAL INFORMATION

The School has general policies that apply to all courses regarding such matters as Dishonest Practice, Allowed types of calculators, Marks and Grades boundaries, Late Work, Academic Liaison, Assistance for Students with Disabilities, Reconsideration of Grades, Special Consideration Applications, etc. This information is available on the *Physics & Astronomy Undergraduate Courses* section of the Learn site.

PHYS310 2022			Mon	Tue	Wed	Wed	Thu	Fri
	Monday	Lecture		9AM	10AM		9AM	
Terms 1 & 2	Date	Week		BT111	Rehua528		Forestry, F1	
	14-Feb							
	21-Feb	1		ThermoLec	ThermoLec		ThermoTut	
PHYS310 Thermal, Statistical and Nuclear Physics	28-Feb	2		ThermoLec	ThermoLec		ThermoTut	
	7-Mar	3		ThermoLec	ThermoLec		ThermoTut	
	14-Mar	4		ThermoLec	ThermoLec		ThermoTut	
	21-Mar	5		StatMechLec	StatMechLec		SMTut/Thermo Review	
	28-Mar	6		StatMechLec	StatMechLec		THERMO TEST	
	4-Apr	7		StatMechLec	StatMechLec		SMTut	
	11-Apr							
	18-Apr							
	25-Apr							
	2-May	8		StatMechLec	StatMechLec		SMTut	
	9-May	9		NucLec	NucLec		NucTut	
SM test	16-May	10		NucLec	NucLec		NucTut	
	23-May	11		NucLec	NucLec		NucTut	
	30-May	12		NucLec	NucLec		NucTut	
	6-Jun							
	13-Jun							
	20-Jun							
version Feb 21	In draft form until Test timetable is confirmed.							