



The
University
Of
Sheffield.

Department
Of
Physics &
Astronomy.

RECOMMENDED BOOKLIST

2011-2012

Students are advised not to purchase course textbooks until they arrive in Sheffield, guidance concerning the expected level of use of each book will be given at the first lecture. Most of the recommended texts are available in limited numbers from the University Library and can be located via the University Library website at <http://library.shef.ac.uk/>. You can also look at the Information Commons site <http://www.shef.ac.uk/infocommons/> where there are over 100,000 books including some of the most heavily used undergraduate text books in the University.

Students are EXPECTED TO BUY books in bold type. For examination purposes they are expected to be familiar with all or parts of the books relevant to their courses.

Principal reference text(s) - books that students should use to back up lecture material, complete home works etc. These books should be at a suitable level for the module concerned. Books in this section would be the ones you would expect students to look at during the course. We will try to ensure the library has a reasonable number of these texts.

Secondary reference text(s) - include more advanced books or books that cover peripheral topics etc. These books are normally available in the Main Library.

FOUNDATION YEAR

PHY008

Mr Simon Gray	Atomic and Nuclear Physics.
Dr Costanzo	Properties of Matter Oscillations, waves & optics

Recommended Books

Cutnell and Johnson. Physics. (Wiley, 6th edition or more recent edition)

Principal or

Adams and Allday: Advanced Physics (Oxford) ***Principal***

Note the second book covers material examined in the properties of matter course which is not dealt with by Cutnell and Johnson.

PHYSICS AND MATHS

PHY101 MECHANICS, VIBRATIONS AND WAVES

Dr Richardson	Mechanics and Dynamics
Dr Hobbs	Heat & Matter
Dr Booth	Electricity & Magnetism I
Dr Daw	Relativity
Prof Cockburn	Physics and Computing Laboratory

Recommended Books

Young and Freedman "University Physics with Modern Physics" 11th or 12th edition (either is acceptable), published by Pearson Addison-Wesley
You must buy this book with its associated Mastering Physics software access. You will need the access code from the Mastering Physics software for some of your weekly assessments throughout both semesters of the course.

PHY102 QUANTA AND MATTER

Prof Cockburn	Quanta
Prof Wilson	Light and Sound

Recommended Books

Young and Freedman "University Physics with Modern Physics" 11th or 12th edition (either is acceptable), (ISBN 0-8053-8684-X) published by Pearson Addison-Wesley You must buy this book with its associated Mastering Physics software access. You will need the access code from the Mastering Physics software for some of your weekly assessments throughout both semesters of the course.

PHY104 ELEMENTARY ASTROPHYSICS

Dr S Littlefair	Elementary Astrophysics
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Recommended Books

General

"An Introduction to Modern Astrophysics" by Carroll & Ostlie, 2007, Pearson.

Primary

"Atoms, stars and nebulae" by L Aller, 1991, CUP. ***Secondary***

"Astrophysics and stellar astronomy" by T L Swihart, 1968, Wiley. ***Secondary***
Stars

"The Stars: their structure and evolution" by R J Tayler, 1994, CUP.

Secondary

"Stars, their birth, life and death" by I S Shklovskii, 1978, Freeman.

Secondary

"Stellar astrophysics Volume 3, stellar structure and evolution" by E Bohm-Vitense, 1992, CUP. ***Secondary***

PHY106 THE SOLAR SYSTEM

Dr Goodwin	The Solar System
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Recommended Books

Useful books.

McBride and Gilmour "An introduction to the Solar System" (OU Press)

Secondary

Kelly Beatty, O'Leary and Chaikin "The New Solar System" (CUP) *Secondary*

Zeilik & Gregory "Introductory Astronomy and Astrophysics" (Saunders College Publishing) *Secondary*

PHY111 OUR EVOLVING UNIVERSE

Dr Cartwright	Seminar speakers: Prof Dhillon- Binary Stars, Prof. Tadhunter - Black Holes, Dr Daw - Dark Matter, Dr Goodwin - Astrobiology
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Recommended online textbook:

<http://www.astronomynotes.com> *Principal*

Recommended textbooks:

Most elementary astronomy books should be useful

PHY112 INTRODUCTORY MATHEMATICS FOR PHYSICISTS & ASTRONOMERS

Prof Mowbray, Dr Richardson Dr Kudryavtsev
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Recommended textbooks:

Introductory Maths for Physicists and Astronomers – compiled by David Mowbray (Pearson)

You must buy this book as it provides access to the online system

D W Jordan and P Smith Mathematical Techniques, an Introduction for the Engineering, Physical, and Mathematical Sciences' 3rd edition *Secondary*

Mary L. Boas Mathematical methods in the physical sciences (Wiley) *Secondary*

K. A. Stroud Engineering mathematics (Macmillan) *Secondary*

G Stephenson Mathematical methods for science students (Longman)

Secondary

PHY113 PROFESSIONAL SKILLS IN PHYSICS I
PHY114 PROFESSIONAL SKILLS IN PHYSICS II

Prof Cockburn	Physics and Computing Laboratory
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Recommended Books for the LAB

'EXPERIMENTAL METHODS; an introduction to the analysis and preparation of data' by L Kirkup (Wiley).

Handouts: The detailed laboratory folder provided for laboratory work in PHY101 also has a description of procedures, timetables etc. for this module. Further instruction sheets are supplied as required for the computing work and for specific experiments.

**PHY115 PROFESSIONAL SKILLS IN PHYSICS
AND ASTRONOMY I**
**PHY116 PROFESSIONAL SKILLS IN PHYSICS
AND ASTRONOMY II**

Dr Littlefair	
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Recommended Books for the LAB

"Experimental Methods" L Kirkup, (John Wiley)

**PHY123 THE PHYSICS OF SUSTAINABLE
ENERGY**

Prof R Jones Prof D Lidzey

Recommended books:

Sustainable Energy Without the Hot Air: David MacKay.

PHY202 QUANTUM MECHANICS

Prof Tovey	Quantum Mechanics
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Recommended Books

"Introduction to Quantum Physics" A C Phillips (Wiley)

"An Introduction to Quantum Physics" A P French and E F Taylor (F & T) (Nelson)

Principal

PHY203 THERMAL PHYSICS

Prof. Cockburn	Thermal Physics
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Recommended Books

There is no compulsory book for this course. Texts at a similar level, covering all of the course syllabus are:

"Introduction to Thermal Physics" Schroeder (Addison Wesley)

"Concepts in Thermal Physics" Blundell & Blundell (OUP)

"Statistical Physics" Mandl (John Wiley & Sons)

Other useful books:

Relevant chapters of Young and Freedman "University Physics with Modern Physics" 11th edition, by (ISBN 0-8053-8684-X) published by Pearson Addison-Wesley

"Equilibrium Thermodynamics" Adkins (CUP)

"Thermal Physics" Kittel and Kroemer (Freeman)

"Feynman Lectures on Physics Vol. 1" (Addison Wesley)

PHY204 INTRODUCTION TO SOLID STATE PHYSICS

Dr L Wilson	Introduction to Solid State Physics
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Recommended Books

All material in this course is covered at the right level in

J R Hook & H E Hall "Solid State Physics" (2nd Edition) Wiley (1991) ***Principal***

H M Rosenberg "The Solid State" (3rd Edition) Oxford University Press (1988)

Secondary

The more advanced book, that covers the material in more detail. and which will be useful in later years, is,

C Kittel: 'Introduction to Solid State Physics' (8th edition) Wiley (2005)

Secondary

PHY205 ELECTROMAGNETISM

Prof. Mowbray	Electromagnetism
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Recommended Books

Duffin. Electricity and Magnetism. (W J Duffin Publishing) ***Principal*** out of print but many copies available in the library

Grant, I S and Phillips, W R. Electromagnetism. (Wiley) ***Secondary***

Robert H Good Classical Electromagnetism (Sauders College Publishing)

Secondary

Paul Lorraine and Dale Corson Electromagnetic Fields and Waves (Freeman)

Secondary

Daniel Fleisch A Student's Guide to Maxwell's Equations (Cambridge)

Secondary

PHY206 ATOMIC SPECTRA AND RELATIVITY

Dr Daw	Relativity
Dr Paganis	Atomic Spectra

Recommended Books

FOR ATOMIC PHYSICS - Beiser, A. *Concepts of Modern Physics*. (McGraw Hill)

FOR SPECIAL RELATIVITY, A.P. French, (M.I.T. introductory physics series) – This book is available electronically from computers within the University network through MUSE at: <http://lib.mylibrary.com/browse/open.asp?id=1972&loc=>

You can access this book from your machine outside the University too if you configure a

virtual private network (VPN) - instructions on how to do this are available through the CICS

web pages. I don't teach out of this book, but it is useful for background material and as a source of problems.

Other useful books - for the atomic physics:

A.C. Phillips *Introduction to Quantum Mechanics*

Gerhard Herzberg *Atomic Spectra and Atomic Structure*.

Eisberg, R M. *Fundamentals of Modern Physics*. (Wiley)

Leighton, R B. *Principles of Modern Physics*. (McGraw Hill)

PHY207 NUMERICAL AND COMPUTATIONAL PHYSICS

Dr. Costanzo	Numerical and Computational Physics
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Recommended Books

For reference only:

"Numerical Recipes in C++" W. H. Press, B. P. Flannery, S. A. Teukolsky, W. T. Vetterlity (Cambridge Univ. Press)

Secondary

PHY213 STELLAR STRUCTURE AND EVOLUTION

Prof. Dhillon	Stellar Structure and Evolution
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Must buy: My notes are fairly comprehensive, so there are no must buy texts

The Stars: their structure and evolution, by R. J. Tayler (Cambridge University Press) ***Principal***

This book is currently in its revised second edition (1994) and you will be able to buy it for around £19 (paperback).

Introduction to stellar astrophysics, volume 3: Stellar structure and evolution by E. Bohm-Vitense (Cambridge University Press). ***Secondary***

This book is still in its first edition (1992) and you will be able to buy for around £28.

The Physics of Stars, by A. C. Phillips (Wiley). ***Secondary***

You will be able to buy the revised second edition (1999) in paperback for around £33.

An Introduction to the Theory of Stellar Structure and Evolution, by D. Prialnik (Cambridge University Press)

This book came out at the end of 2000 and the paperback edition can be bought for around £37. ***Secondary***

100 Billion Suns: The birth, life and death of the stars, R. Kippenhahn (Princeton University Press). ***Secondary***

The 1985 paperback version of this book, which cost around £5, is out of print in the UK, but you might be able to order the most recent US paperback edition (1993) for about £14.

Stellar Structure and Evolution, by R. Kippenhahn & A. Weigert (Springer-Verlag). ***Secondary***

You will be able to buy the most recent paperback edition (1994) for around £52.

PHY 216 STRUCTURE AND EVOLUTION OF GALAXIES

Prof Tadhunter

Recommended Books

Sparke and Gallagher, "Galaxies in the Universe-An Introduction", Cambridge

Principal

Mark H. Jones, Robert J.A. Lambourne , "An Introduction to Galaxies and Cosmology", Cambridge

Secondary

PHY 217 TECHNIQUES OF OBSERVATION

Prof Vik Dhillon

Must buy: My notes are fairly comprehensive, so there are no must buy texts

Recommended Books

Electronic Imaging in Astronomy by Ian S. McLean (Springer-Verlag), ISBN: 9783540765820.

Astronomy: Principles and Practice by A. E. Roy and D. Clarke (Institute of Physics Publishing), ISBN: 9780750309172.

To measure the sky by F. R. Chromey (CUP), ISBNL: 9780521747684

Astrophysical Techniques by C. R. Kitchin (Taylor & Francis Inc), ISBN: 9781420082432.

PHY221 TOPICS IN CLASSICAL PHYSICS

Dr Rhoda Hawkins	Topics in Classical Physics
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Recommended Books

There is no must- buy book. The module is supported by extensive lecture notes which are free to download from the Physics teaching webpage.

Fowles and Cassiday, "Analytical Mechanics", Thomson Brooks/Cole, 7th ed., or older editions (authored by Fowles alone) ***Principal***

A very readable general introduction. Beyond A-level, but understandable with undergrad maths. Library stocks a number of copies.

Goldstein "Classical Mechanics", Addison-Wesley (any edition) ***Secondary***
In- depth theory, the 'gold standard' of the professional theorist, but breadth and depth far exceed the scope of PHY221

French and Ebison "Introduction to Classical Mechanics", Wokingham
1986 ***Secondary***

French "Newtonian Mechanics" (any edition) ***Secondary***

Kibble and Berkshire, "Classical Mechanics", 4th ed., Longman
1996 ***Secondary***

J F Douglas, 'An introduction to dimensional analysis for engineers', Pitman,
London 1969 ***Secondary***

Brief but clever introduction to dimensional analysis.

H G Hornung, 'Dimensional Analysis: Examples of the use of symmetry', Dover
Publications ***Secondary***

Recent - which is rare for dimensional analysis texts.

PHY225 PROGRAMMING IN C

Dr Thompson	
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Recommended Books

Kelley, Pohl, "A Book on C" (4th Edition), Addison-Wesley ISBN: 0201183994
Principal

PHY226 MATHEMATICAL METHODS FOR PHYSICS AND ASTRONOMY

Dr Buckley	Complex numbers, differential equations, Fourier series
Dr Kudryavtsev	Partial Differential Equations
Prof Mowbray	Fourier transforms and convolution

Recommended Books

Jordan, D. W. (Dominic William) Mathematical techniques : an introduction for the engineering,

Physical and mathematical sciences / D.W. Jordan and P. Smith. 4th ed. Oxford : Oxford University Press, 2008.

Bib Id 2260314, ISBN, etc. 9780199282012 (pbk.) : 0199282013 (pbk.)

Principal

Kreyszig, Erwin. Advanced engineering mathematics / Erwin Kreyszig, 9th [International] ed.

Hoboken, N.J. : Wiley, c2006. Bib Id 2260530, ISBN, etc. 9780471728979 (pbk.), 0471728977 (pbk.) *Secondary*

Mary L Boas – Mathematical Methods in the Physical Sciences – (Wiley) Secondary*

PHY227 OPTICS

Dr Tartakovskii	Optics
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Recommended Books

'Optics', by Eugene Hecht (4th Edition, Addison-Wesley 2002).

'Optics and Photonics- An Introduction', by F. Graham Smith and Terry A. King (John Wiley & Sons Ltd 2000). *Secondary*

PHY229 EXTRA-SOLAR PLANETS AND ASTRO-BIOLOGY

Dr Goodwin	
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Recommended Books

"An Introduction to Astrobiology", I.Gilmour & M.A.Sephton, Cambridge University Press, 2004

(ISBN: 0-521-54621-4) *Secondary*

"Extrasolar Planets & Astrobiology" C.A.Scharf, University Science Books, 2009 (ISBN:978-891389-55-9) *Secondary*

"Astrobiology: A Multidisciplinary Approach", J.I.Lunine, Addison Wesley, 2005 (ISBN:0-8053-8042-6) *Secondary*

PHY230 EXPERIMENTAL PHYSICS 1

Dr. Paganis

Recommended Books

G L Squires "Practical Physics" (Cambridge University Press) ***Principal***

L Kirkup "Data Analysis with Excel" (Cambridge University Press) ***Secondary***

N C Barford "Experimental Measurements: Precision, Error and Truth"

Secondary

J Topping "Errors of observation and their treatment" ***Secondary***

PHY231 EXPERIMENTAL PHYSICS II

Dr. Paganis

Recommended Books

G L Squires "Practical Physics" (Cambridge University Press) ***Principal***

L Kirkup "Data Analysis with Excel" (Cambridge University Press) ***Secondary***

N C Barford "Experimental Measurements: Precision, Error and Truth"

Secondary

J Topping "Errors of observation and their treatment" ***Secondary***

PHY232 THE DYNAMIC INTERSTELLAR MEDIUM

Prof Crowther

Recommended Books

The Physics of the ISM: Second Ed, Dyson & Williams (IoP), ***Principal***

The Physics & Chemistry of the ISM, Tielens (Cambridge), ***Secondary***

Astrophysics of gaseous nebulae and AGN, second ed, Osterbrock & Ferland (USB) ***Secondary***

PHY303 NUCLEAR PHYSICS

Prof Spooner	Nuclear Physics
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Recommended Books

Krane "Introductory Nuclear Physics" (Wiley)

Williams "Nuclear and Particle Physics" (OUP) ***secondary***

PHY304 PARTICLE PHYSICS

Dr. Booth:	Particle Physics
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Recommended Books

Introduction to High Energy Physics" Donald H Perkins ***Principal***
Elementary Particles (3rd edition)" I S Hughes ***secondary***

Background Reading: "Ideas of Particle Physics" G D Coughlan & J E Dodd

Supplementary material is provided on the Web at;

<http://www.cbooth.staff.shef.ac.uk/PHY304>

PHY305 STELLAR ATMOSPHERES

Prof. Crowther	Stellar Atmospheres
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Recommended Books

Bohm-Vitense "Introduction to stellar astrophysics: Volume 2 Stellar Atmospheres" (Cambridge) ***Principal***

Gray "The observation and analysis of stellar photospheres" (Cambridge) ***secondary***

Lamers & Cassinelli "Introduction to stellar winds" (Cambridge) ***secondary***

PHY306 INTRODUCTION TO COSMOLOGY

Dr Cartwright	
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Recommended Books

Andrew Liddle, "An Introduction to Modern Cosmology" ISBN13 9780470848357, ISBN10 0470848359 (2nd ed) (Wiley) ***Secondary***

Michael Rowan Robinson, "Cosmology" (4th ed) ISBN13 9780198527466, ISBN10 0198527462 (OUP) ***Secondary***

Barbara Ryden, "Introduction to Cosmology" ISBN10 0805389121, ISBN13 9780805389128 (Addison Wesley) ***Secondary***

PHY307 TECHNIQUES OF PROBLEM SOLVING IN PHYSICS & ASTRONOMY

Prof Crowther Dr Booth	Techniques Of Problem Solving In Physics & Astronomy
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Recommended Books

Carroll & Ostlie "Modern Astrophysics" (Addison Wesley publisher) ***principal***

"200 Puzzling Physics Problems" by Peter Gnadig, Gyula Honyek & Ken Riley (Cambridge University Press 2001).

"Thinking like a physicist", N Thompson (Hilger 1987) (out of print)

PHY309 FURTHER QUANTUM MECHANICS

Prof Whittaker	Further Quantum Mechanics
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Recommended Books

Stephen Gasiorowicz "Quantum Physics" (Wiley)
Nouredine Zettili "Quantum Mechanics" (Wiley)

PHY313 MATHEMATICAL PHYSICS

Prof. Whittaker	Mathematical Physics
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Recommended Books

Mary Boas "Mathematical Methods in The Physical Sciences" (Wiley)
Arfken and Weber "Mathematical Methods for Physicists" (Academic Press)

PHY314 RELATIVITY AND COSMOLOGY

Dr. Daw	Relativity & Cosmology
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Recommended Books

The course has extensive notes. I advise looking at the library copies of these books before considering any purchases.

J. Hartle "Gravity: An Introduction to Einstein's General Relativity" (Addison Wesley) ***Principal***

- This is an excellent introduction to the subject, at a level more advanced than the course.

A, French "Special Relativity" (Chapman and Hall) ***Secondary***

- an introductory special relativity text, for those of you who do not remember the prerequisites. Do not worry, I will go over this material again in the course.

B. Schutz "A first course in general relativity" (CUP) ***Secondary***

- An older and more mathematical treatment introducing general relativity for the beginner. For those of you who like a more formal approach, this book is worth a look.

B. Schutz "Gravity from the Ground Up" (Cambridge) ***Secondary***

- A introduction to the role of gravity in physics. Interesting coverage of many topics in gravitation from an experimental perspective with minimal mathematical sophistication required. A good background reading text for those looking to become knowledgeable about the subject without absorbing much formalism. A unique text.

L. Ryder "Introduction to general relativity" (Cambridge) ***Secondary***

- Though advertised as an introduction, this book uses much sophisticated mathematical formalism. The formal treatment of differential geometry uses a very different language than that we have become used to in physics. For those students from the maths department who take my course who are troubled by the informal approach to infinitesimals and limits, Ryder does try to do treat these subjects more carefully than most physicists do. Take a look.

R. Wald "General Relativity" (Chicago) ***Secondary***

- A rigorous mathematical treatment for the brave and courageous. Very sophisticated, this treatment carries the material to research level.

PHY315 TECHNIQUES OF PROBLEM SOLVING IN PHYSICS

Dr. Booth	Techniques Of Problem Solving In Physics
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Recommended Books

"200 Puzzling Physics Problems" by Peter Gnadig, Gyula Honyek & Ken Riley (Cambridge University Press 2001).

"Thinking like a physicist", N Thompson (Hilger 1987) (out of print)

PHY318 CONCEPTS OF ASTRONOMY

Prof. Crowther	Concepts of Astronomy
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Recommended Books

Carroll & Ostlie "Modern Astrophysics" (Addison Wesley publisher)*principal*

PHY320 NUCLEAR ASTROPHYSICS

Dr Thompson	Nuclear Astrophysics
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Recommended Books

Pagel "Nucleosynthesis and Chemical Evolution of the Galaxies" (CUP)

Principal

Background reading

Longair "High Energy Astrophysics" (CUP) ***Secondary***

Hillas "Cosmic Rays" ***Secondary***

Wolfendale (Ed) "Cosmic Rays at Ground Level" ***Secondary***

Clayton "Principals of Stellar Evolution and Nuclearsynthesis" (Chicago)

Secondary

PHY323 DARK MATTER AND THE UNIVERSE

Prof Spooner	Dark Matter
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Recommended Books

My own notes will be the primary reference. Also useful for background and interest are:

Hartle - 'Gravity - an introduction to Einstein's general relativity', published by Pearson Education

Kolb and Turner, The Early Universe - Too hard for this course, but a standard reference in the field.

Griffiths, Introduction to Elementary Particles - For an introduction to high energy and particle physics.

French, Special Relativity - For background on relativistic dynamics

PHY324 HISTORY OF ASTRONOMY

Dr S Cartwright

Recommended Books

M Hoskin (ed.) "Cambridge Concise History of Astronomy" (Cambridge)

Secondary

A. Pannekoek "History of Astronomy" Courier Dover Publications ISBN 0486659941 ***Secondary***

PHY330 ELECTRONS IN SOLIDS

Prof Skolnick

Electrons in Solids

Recommended Books

J R Hook and H E Hall "Solid State Physics" (Wiley)

C Kittel "Introduction to Solid State Physics" (Wiley)

Other useful books are:

H M Rosenberg "The Solid State" (Oxford)

N W Ashcroft and N D Mermin "Solid State Physics" (Saunders College Publishing)

J S Blakemore "Solid State Physics" (Cambridge)

PHY331 ADVANCED ELECTRODYNAMICS AND MAGNETISM

Prof Lidzey &

Magnetism and Superconductivity

Dr Kok

Advanced Electromagnetism

Recommended Books

Magnetism and Superconductivity

Hook & Hall "Solid State Physics" (Wiley) ***Principal***

C Kittel "Introduction to Solid State Physics" (Wiley) ***Secondary***

Advanced Electromagnetism

Extensive course notes are available but the following books are recommended

R.H. Good, Classical Electromagnetism, Saunders College Pub. (1999)

J.D. Jackson, Classical Electrodynamics, Wiley (1998)

PHY332 ATOMIC AND LASER PHYSICS

Prof Fox	Atomic and Laser Physics
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Recommended Books

"The Physics of Atoms and Quanta" by Haken & Wolf (Springer-Verlag)

Principal

"Atoms, Molecules and Photons" by W Demtroder (Springer-Verlag) ***Principal***

Other Useful Books Include:

"Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles" by Eisberg & Resnick (Wiley) ***Secondary***

"Optoelectronics, an Introduction" by Wilson & Hawkes (Prentice Hall)

Secondary

"Introduction to quantum mechanics" by A. C. Phillips (Wiley) ***Secondary***

"The Light Fantastic" by I R Kenyon (Oxford) ***Secondary***

"Laser Fundamentals" by W.T Silfvast (Cambridge) ***Secondary***

"Optics and Photonics" by Smith F G and King T A (Wiley). ***Secondary***

"Concepts of Modern Physics" by Beiser A (McGraw Hill) ***Secondary***

PHY333 STATISTICAL PHYSICS

Prof Clarke	Statistical Physics
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Recommended Books

"Statistical Physics" by Mandl (Wiley) ***Principal***

"Concepts in Thermal Physics" by Blundell and Blundell (Oxford) ***Principal***

"Molecular Driving Forces" by Dill and Bromberg (Garland Science) ***Secondary***

PHY401/2 COSMIC ORIGINS (FULL & HALF MODULE)

Dr Goodwin	Theory and Observation of Star and Planet Formation
Prof Crowther	Stellar Evolution
Dr Littlefair	The Transient Universe
Prof Tadhunter	Galaxy Formation and Evolution.

Recommended Books

Star and Planet Formations:

Lecture notes

Stellar Evolution:

Bohm-Vitense: Stellar Astrophysics Vol 3: Stellar Structure & Evolution (Cambridge)

"Introduction to Sun and Stars" Green and Jones (Cambridge)

Transient Universe:

"An Introduction to Modern Astrophysics", Carroll & Ostlie, 2007, Pearson.
Galaxy Evolution in the High Redshift Universe: Lecture notes

PHY403 ADVANCED STATISTICAL PHYSICS

Prof Whittaker	
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Recommended Books

PHY410 PHYSICS OF SEMICONDUCTORS

Dr. Wilson	Applications of Semiconductors
Prof Skolnick	New Developments in Semiconductors

Recommended Books

Parker G "Introductory Semiconductor Device Physics" (Prentice Hall)

Principal

Other useful books include:

Fraser D A "The Physics of Semiconductor Devices" (OUP) . ***Secondary***

Wilson J, Hawkes J F B "Optoelectronics: An Introduction" (Prentice Hall) .

Secondary

Sze S M "Physics of Semiconductor Devices" (Wiley) . ***Secondary***

Recommended Books

The Physics of Low Dimensional Structures, J H Davies, Cambridge University Press *Principal*

M J Kelly "Low Dimensional Semiconductors" (Oxford) ***Principal***

J Singh "Physics of Semiconductors and their Heterostructures" (McGraw Hill)

Principal

J R Hook and H E Hall "Solid State Physics" (Wiley) ***Secondary***

C Kittel "Introduction to Solid State Physics" (Wiley) ***Secondary***

C Weisbuch and B Vinter "Quantum Semiconductor Structures" (Academic Press)

Secondary

PHY411/2 ASPECTS OF MODERN PHYSICS (HALF/FULL MODULE)

PHY436 ASPECTS OF MODERN PHYSICS (HALF MODULE)

Drs. Kudryavtsev & Paling Prof Fox Dr Cadby	Experimental Astroparticle Physics Quantum Optics Introduction to Biophysics <i>A 4th Sub module will be specified at a later date</i>
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Recommended Books for EXPERIMENTAL ASTROPARTICLE PHYSICS

Donald Perkins. Particle Astrophysics. Oxford Univ. Press, 2003. ***Principal***

H. V. Klapdor-Kleingrothaus and K. Zuber. Particle Astrophysics. IOP, 2000.

Principal

L. Bergstrom and A. Goobar. Cosmology and Particle Astrophysics. Wiley, 1999.

Principal

T. Gaisser 'Cosmic Rays and Particle Physics' CUP 1991 or later ***Principal***

Other resources:

Lectures on the Web at:

http://kudryavtsev.staff.shef.ac.uk/phy411_ap/

Recommended Books for INTRODUCTION TO BIOPHYSICS

No single book currently covers this material. Recommendations for further reading will be given in the lectures.

For an excellent non-specialist introduction to molecular cell biology, see Goodsell, D.S., (1998). The Machinery of Life, Springer-Verlag, New York.

Secondary

A good overview of diffusion mechanics in biological systems can be found in the excellent "Random walks in biology" by Howard C. Berg. ***Secondary***

Recommended Books for QUANTUM OPTICS

"Quantum Optics – An Introduction" by Fox, A. M. (Oxford University Press).

Principal

PHY435 PHYSICS IN AN ENTERPRISE CULTURE

Dr Richardson Prof Lidzey	
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Recommended Books:

See web page:

<http://www.shef.ac.uk/physics/teaching/phy435/index>

PHY461

HIGH ENERGY ASTROPHYSICS

Prof Tadhunter

Recommended Books

Theory of Radiation Processes

"High Energy Astrophysics" (1st edition), Longair, Cambridge University Press, 1981. ***Principal***

"High Energy Astrophysics, Vol. I and II" (2nd edition) Longair, Cambridge University Press, 1992/94. ***Principal***

"Radiative Processes in Astrophysics" Rybicki & Lightman, Wiley Interscience Publications, 1979. ***Secondary***

Radio Astronomy

"An Introduction to Radio Astronomy" Burke and Graham-Smith, Cambridge University Press, 1997. ***Secondary***

X-ray Astronomy

"Exploring the X-ray Universe" Charles & Seward, Cambridge University Press, 1997. ***Secondary***

Active Galaxies and Quasars

"Active Galactic Nuclei" Robson, John Wiley and Sons, 1996. ***Secondary***

"An introduction to Active Galactic Nuclei" Peterson, Cambridge University Press, 1997. ***Principal***

PHY466

DEVELOPMENT OF PARTICLE PHYSICS

Dr. V. Kudryavtsev Development of Particle Physics

Recommended Books

R. N. Cahn and G. Goldhaber . The experimental foundations of particle physics. Cambridge Univ. Press, 2009 ***Principal***

D. H. Perkins. Introduction to high energy physics. Cambridge Univ. Press, 2000. ***Principal***

G. D. Coughlan and J. E. Dodd. The ideas of particle physics. Cambridge Univ. Press, 1994. ***Principal***

B. R. Martin and G. Shaw. Particle physics. John Wiley & Sons, 1994. ***Principal***

<http://kudryavtsev.staff.shef.ac.uk/phy466>

PHY469

SOFT MATERIALS

Dr Geoghegan Soft Materials

Recommended Books

Soft Condensed Matter, R A L Jones, OUP ***Principal***

PHY472 **ADVANCED QUANTUM MECHANICS**

Dr Kok	Advanced Quantum Mechanics
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Recommended Books

Extensive lecture notes are given out, but the majority of the material is covered in a very accessible way in

"Quantum Processes" Systems, and Information, Schumacher and Westmoreland, Cambridge 2010.

PHY475 **OPTICAL PROPERTIES OF SOLIDS**

Prof Fox	Optical Properties of Solids
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Recommended Book

"Optical Properties of Solids" by Fox A M, (Oxford University Press). ***Principal***

Other useful books:

"Introduction to Solid State Physics" by Kittel C, (Wiley). ***Secondary***

"Solid State Physics" by Burns G, (Academic). ***Secondary***