

Transition Year Physics

Universities and Institutes throughout Ireland offer a number of different options for Transition Year Placements, 'Transition Year Week' experiences and Transition Year Lectures. See below for links to information on Transition Year. There are also many industries (see listing on back cover), in which physicists are employed, that may offer work placements or transition year programmes.

To find out where you can study physics at third level in Ireland please find all details on the annual leaflet 'Physics Courses in Ireland' which can be downloaded via links from the IOP in Ireland website at <http://www.iopireland.org/activity/education/index.html> or it can be requested from the Institute of Physics in Ireland.

A set of 18 profiles of the 'Day in the Life' of various working physicists is available on the website via links at <http://www.iopireland.org/activity/careers/index.html> or a hard copy can be requested from the Institute of Physics in Ireland.

TRANSITION YEAR WORK EXPERIENCE AND OTHER ACTIVITIES

Cork Institute of Technology <http://www.physics.cit.ie>

Dublin City University DCU <http://www.dcu.ie/physics/>

Dublin Institute of Technology DIT
<http://www.physics.dit.ie/services.html>

Limerick Institute of Technology leah.wallace@lit.ie

NUI Galway NUIG
http://www.nuigalway.ie/physics/links_main.html

NUI Maynooth NUIM
<http://www.physics.nuim.ie/TransitionYearStudents.shtml>

Queen's University Belfast QUB physics@qub.ac.uk

Trinity College Dublin TCD
<http://www.tcd.ie/Physics/outreach/TY>

University College Cork UCC <http://www.astro.ucc.ie/TY>

University College Dublin UCD
<http://www.ucd.ie/physics/transition.htm>

University of Limerick denise.wallace@ul.ie

Waterford Institute of Technology cwalsh@wit.ie

TRANSITION YEAR PHYSICS MODULES AND PROJECT IDEAS

Medical Physics module Medical Physics module based on 8 weeks (16-20 hours). Includes hands-on experiments and demonstrations. Supported by Institute of Physics in Ireland and IBEC. Contact paulnugent@eircom.net

Astronomy module http://www.astro.ucc.ie/TY_AstronomyModule/ Designed for and (primarily by) teachers interested in giving a module in Astronomy. Assuming no previous knowledge of Astronomy, it is based on a series of

19 hands-on activities for the students, augmented by clearly written background material. Powerpoint presentations are also provided for the teacher.

Design and Discovery module (Intel) http://www.skool.ie/design_discovery.asp This design and discovery module promotes a hands-on learning experience by encouraging students to identify creative solutions to everyday problems in the world of design and engineering. The module focuses on basic scientific, design and engineering concepts.

The Virtual Physics Laboratory From a lens to a nuclear power station. A suite of over 170 simulations based on real data. Produced by the National Physics Laboratory and the Institute of Physics. Contact paulnugent@eircom.net

Science UPD8 <http://www.upd8.org.uk/> Science UPD8 is a website translating the latest breakthroughs and science behind the news, into inspiring activities – and publishing them fast. Includes activities and worksheets. Well worth the short registration.

Teachers domain <http://www.teachersdomain.org> Excellent collection of short video clips by experts.

TEACHNET <http://www.teachnet.ie/> Senior Cycle & Transition Year physics resources found using links from the home page.

LEPLA <http://www.lepla.org/en/index.php> Relevant, simple, but non-trivial, physics experiments with support materials to help set up the experiments and analyse the results. They are designed to help ease the transition from school to university.

SciCast Physics competition <http://www.planet-scicast.com/physics.cfm> Produce a film of less than two and a half minutes that explains physics in an entertaining way. Open to all ages.

Physics on Stage demonstration booklet <http://www.scienceonstage.ie/> Use links to Physics on Stage 2 and Physics on Stage 3 to download the booklets of demonstrations.

PHYSICS BOOK CLUB (NO PREFERENCE, IN ALPHABETICAL ORDER)

- **A Short History of Nearly Everything** by Bill Bryson
Showcases science's crowning achievements and presents them in readable fashion. With topics ranging from continental drift to the nature of time, Bryson offers up clearly argued explanations able to reach even the least scientifically inclined. A New York Times Notable Book for 2003.
- **Big Bang** by Simon Singh
One of the very best books dealing with cosmology, because Singh follows the same plan he used in his brilliant Code Book: puts people – not equations – first in the story. By linking the progression of the Big Bang theory with the scientists who built it up bit by bit, Singh also uncovers an important truth about how such ideas grow.
- **Can you feel the force?** by Richard Hammond
For this book about physics, Richard Hammond, the TV presenter on Top Gear and Brainiac won the 2007 Royal Society junior prize for Science Books. The book aims to use physics to answer questions such as 'what's inside an atom?' and 'can you lie on a bed of nails?'. Also shortlisted for this same prize: 'It's true! Space turns you into spaghetti!' by Heather Catchpole and Vanessa Woods and 'Science Investigations: Electricity' by John Farndon.
- **Dirk Gently's Holistic Detective Agency** by Douglas Adams
What do a dead cat, a computer whiz-kid, an Electric Monk who believes the world is pink, quantum mechanics and pizza have in common? Apparently not much; until Dirk Gently, private investigator, sets out to prove the fundamental interconnectedness of all things by solving

a mysterious murder, assisting a mysterious professor, unravelling a mysterious mystery, not to mention saving the human race from extinction along the way? From the author of the Hitch Hiker's Guide to the Galaxy.

■ **The Elegant Universe** by Brian Greene

In a rare blend of scientific insight and writing as elegant as the theories it explains, Brian Greene, peels away the layers of mystery surrounding string theory to reveal a universe consisting of 11 dimensions, where the fabric of space tears and repairs itself and all matter, from the smallest quarks to the most gargantuan supernovas, is generated by the vibrations of microscopically tiny loops of energy.

■ **Flashes of Brilliance** by Dick Ahlstrom

A collection of published articles, reflect the diversity, the volume and the outstanding quality of scientific research happening in Ireland today. DVD accompanies the book.

■ **Giant Leaps** published by London Science Museum and the Sun Newspaper

Giant Leaps is an often hilarious guide to some of the key discoveries, inventions and events in the history of science, technology and medicine. The right-hand pages are written in the style of a sensational Sun front-page scoop, whilst the left-hand pages give a more serious but nonetheless accessible account of the key event.

■ **Ingenious Ireland** by Mary Mulvihill

A county-by-county exploration of Irish mysteries and marvels. Excellent accompanying website includes student activities <http://www.ingeniousirelandonline.ie>

■ **In 90 minutes series**

An easy-to-read series, eminent science writers John and Mary Gribbin look at the lives and work of eight major

scientists. Each book is accessible enough to be read for fun but informative enough to appeal to students of science. The iconic Albert Einstein emerges as a dashing ladies' man and the greatest scientist of his time. How was Marie Curie's great work shaped by her childhood experiences of oppression under the Czars? And what was Edmond Halley, of comet fame, doing as Captain of a King's Ship and later spy for the Crown? An introduction and afterword places each scientist's work in the context of the development of their subject.

■ **Local Heroes: Do-it-yourself Science** by Adam Hart-Davis and Paul Bader

Published to coincide with a BBC series of the same name, this book is a practical guide to 50 scientific experiments. All offer an insight into inventions of the modern world, from a balloon powered boat to a fax machine.


■ **October Sky** by Homar H Hickam

Following the launching of the Soviet Sputnik, a young boy and his friends in rural West Virginia build a rocket and win the 1960 National Science Fair. A New York Times Notable Book for 1998.

■ **On Giants' Shoulders: Great Scientists and Their Discoveries from Archimedes to DNA** by Melvyn Bragg

A collection of essays based on Bragg's Radio 4 show. The result is an easily accessible look at some of the founders of modern science, from Archimedes in the 3rd century BC to Marie Curie in the 19th century to present day scientists Francis Crick and James Watson. Each of the 11 essays are





preceded by a chronological outline of the subject's life, and allows the reader to gain a helpful sense of perspective on the forthcoming narrative. Bragg's reflections on each of the subjects are aided and abetted by modern day science popularisers, such as Lewis Wolpert and Susan Greenfield.

- **Physicists of Ireland: Passion and Precision** by M McCartney and A Whitaker

Demonstrating the strength of tradition in Ireland, *Physicists of Ireland: Passion and Precision* is a collection of essays on leading figures from the history of physics in Ireland. It includes physicists born outside of Ireland who carried out significant work in Ireland as well as those who had strong Irish roots but carried out their work outside of Ireland. The book is illustrated with diagrams and photos of historical interest and rounded off with useful suggestions for further reading.

- **The Physics of Star Trek** by Lawrence M Krauss

Guaranteed to keep the class Trekkies occupied!

- **The Physics of Superheroes** by James Kakalios

If superheroes stepped off the comic book page or silver screen and into reality, could they actually work their wonders in a world constrained by the laws of physics? How strong would Superman have to be to "leap tall buildings in a single bound"? Could Storm of the X-Men possibly control the weather? And how many cheeseburgers would the Flash need to eat to be able to run at supersonic speeds? In *The Physics of Superheroes* acclaimed university professor James Kakalios shows that comic book heroes and villains get their physics right more often than you think.

- **Surely You're Joking, Mr. Feynman! (Adventures of a Curious Character)** by Richard P Feynman

The outrageous exploits of one of this century's greatest scientific minds and a legendary American original. In this national bestseller, the Nobel Prize-winning physicist Richard P Feynman recounts in his inimitable voice his adventures trading ideas on atomic physics with Einstein and Bohr and ideas on gambling with Nick the Greek, painting a naked female treader, accompanying a ballet on his bongo drums and much else of an eyebrow-raising and hilarious nature.

- **Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters** by David Hockney

Taking a look at the techniques of the Old Masters, hundreds of paintings are reproduced to show how artists would have used the optics technology available to them in rendering their subjects. 400 colour illustrations. The device that helped painters create photographic likenesses of their sitters was the camera obscura.

- **Why Don't Penguins' Feet Freeze?: And 114 Other Questions**

A compilation of readers' answers to the questions in the 'Last Word' column of "New Scientist", the world's best-selling science weekly. Following the phenomenal success of "Does Anything eat Wasps?" – the Christmas 2005 surprise bestseller – this new collection includes recent answers never before published in book form, and also old favourites from the column's early days. Yet again, many seemingly simple questions turn out to have complex answers. And some that seem difficult have a very simple explanation.

INDUSTRIES

Some employers of physicists in Ireland are listed below and some of these may arrange Transition Year placements. Please search for the website of the company listed for contact information.

Abbott Laboratories

Airtricity

Analog Devices

Andor Technology

Bombardier Shorts

Eircom

Ericsson

Financial services

Fujisawa Ireland

Glen Dimplex

Hewlett Packard

Hospitals

IBM

Intel

Iona Technology

Medtronics

Met. Office

Motorola

Seagate

Silicon & Software

Sumicem

Sun Microsystems

Systems (S3)

Thales Air Defence Ltd

Tyndall Institute

Universities and Institutes
of Technology

Waterford Glass

For any further information please contact:

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